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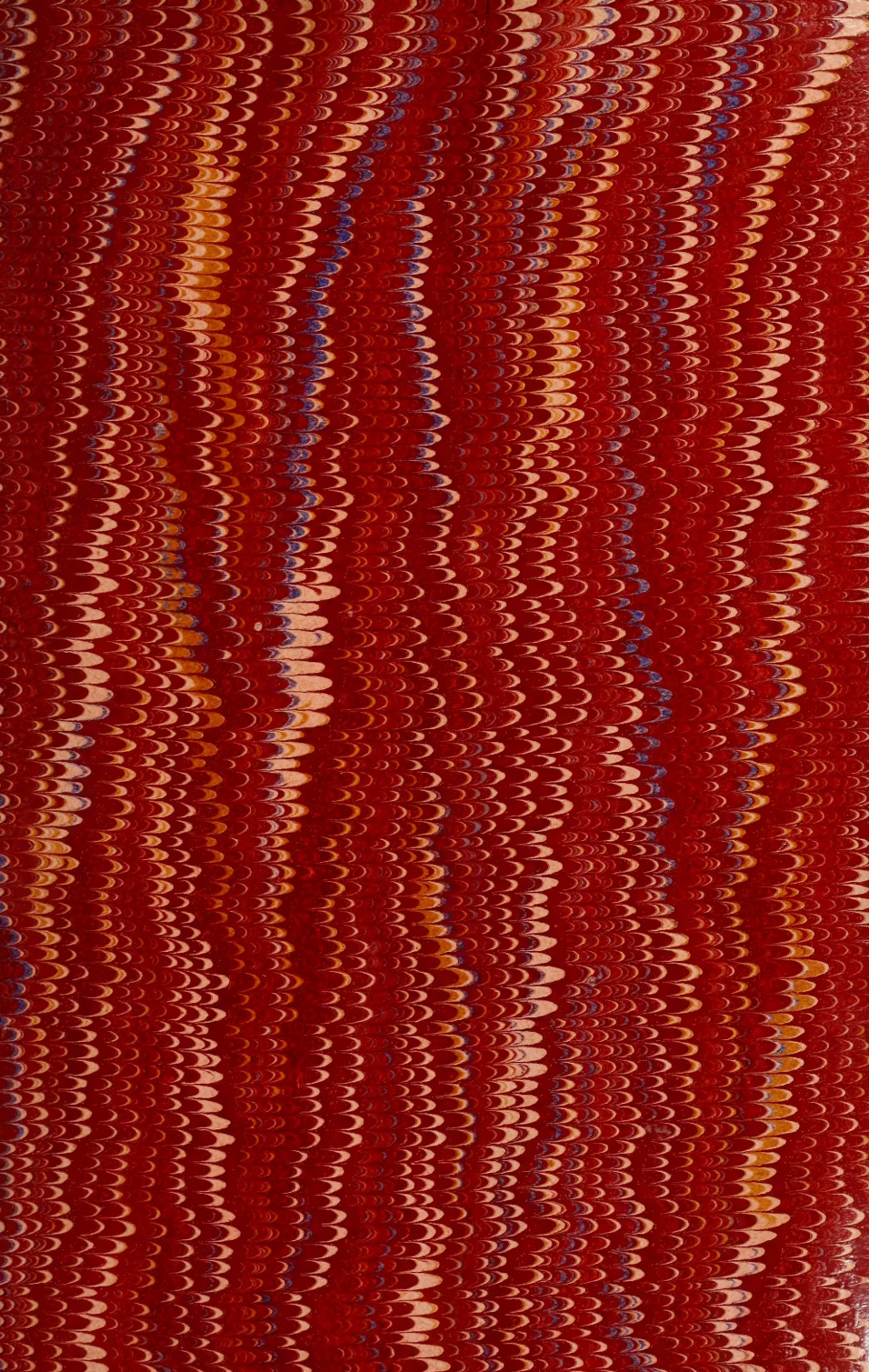

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EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The New Arrangements for the Teaching of Clinical Surgery.

In referring to this subject last month we did not think it necessary to emphasise the fact that one of the surgeons to the Royal Infirmary was not participating in the new arrangement. But since Mr. Cathcart has asked the courtesy of our columns—a courtesy we readily allow—to state his objections to the scheme, we felt that it was necessary to deal more fully with the subject. The Chairman of the School of Medicine of the Royal Colleges, being a member of the University Court, could hardly be approached, and we accordingly asked the Vice-Chairman (Dr. George Gibson) to read Mr. Cathcart's letter and to state his view of the subject in the same *Journal* which contains so full a criticism of the new proposals.

We confess that we wrote as we did last month in the belief—a belief which we still hold—that the new scheme met with almost unanimous approval. It is perfectly true that some of the advocates of the new movement did favour the abolition of the Chair of Clinical Surgery, but they, at the same time, suggested a scheme which bears the closest possible relationship to that now put forward, in which the Professor of Clinical Surgery should, like an archbishop, be *primus inter pars* and *ex-officio* Chairman of a Board of Study for Clinical Surgery. It was because the Chair of Clinical Surgery was regarded by some as an insuperable obstacle to this arrangement that its abolition was advocated.

Everyone admits the great benefit which the University of Edinburgh has derived from the healthy competition of the Extra-Mural School.

Instead of aiming a blow at both of these, the advocates of the new movement believe that it would strengthen both, and, above all, that it would, in so doing, strengthen what we all have most at heart—the good of the Edinburgh Medical School as a whole. There will be plenty healthy rivalry among the lecturers.

The University Court is not really composed of modern Machiavellis.

The very fact that this offer, previously declined, was renewed almost immediately after the election of an exceptionally able teacher to the Chair of Clinical Surgery, one to whose wards the students could be expected for at least some years to flock, is, to our minds, evidence of *bonâ fides* which might have carried conviction to the mind of St. Thomas himself.

It is, of course, possible that Mr. Cathcart is right, and that all the rest of us are wrong. If so, it is reassuring to bear in mind that the arrangement is renewable yearly, and that no very great harm can result in twelve months.

But our expectation is that at the end of twelve months the scheme will have so demonstrated its advantages that when the arrangement is renewed it will be with ALL the Ordinary Surgeons of the Royal Infirmary.

Public Health Administration.

CONFUSION sometimes arises in connection with infectious disease from insufficient knowledge of the actual regulations. This insufficient knowledge is not confined to the medical profession; it is not infrequently glaringly evident in the lesser officials of public health departments, and it is the chief cause of the friction which every now and again arises.

We therefore give for the general benefit sections 57 and 58 of the Amended (1907) Act in full:—

"57. Every parent or person having care or charge of a child who is or has been suffering from infectious disease, or who resides in a house where such disease exists or has existed within a period of three months, who shall knowingly or negligently permit such child to attend school without procuring and producing to the teacher or other person in charge of such school a certificate from the medical officer, which he shall grant free of charge, or from some legally qualified medical practitioner, that proper precautions against spreading disease or infection have been taken, and that such child may attend school without the risk of infecting others, shall be liable to a penalty not exceeding forty shillings:

"Provided that if a person is not required to send notice in the first instance but only in default of some other person, he shall not be liable to any penalty, if he satisfies the Court that he had reasonable cause to suppose that the notice had been duly sent.

"Any teacher or person in charge of any school who shall knowingly permit any child to attend such school in contravention of the provisions of this section, shall be liable to a penalty not exceeding forty shillings.

"58. No person suffering from an infectious disease, or who is living in an infected house, shall (*a*) without proper precautions against spreading such disease or infection, milk any animal, or pick fruit, or

engage in any occupation connected with food, or shall (*b*) carry on any trade or business in such a manner as to be likely to spread such disease or infection, and any person who knowingly contravenes this section shall be liable to a penalty not exceeding ten pounds."

It is quite plain that there is in these enactments an element of elasticity which gives room for the exercise of much common sense. "Proper precautions" and the "manner likely to spread such disease" must not be left to the discretion of some menial of the Public Health Office, but should be settled by an understanding between the Medical Officer of Health and the medical man in charge of the case. If a child is suffering from measles it is simply absurd to prevent the father from going to work: it only tends to cast ridicule on the law, and of all administrative follies there are none so unwise as those which make laws ridiculous.

Tact is an essential ingredient in the composition of all successful medical men, but if there is one class which requires an extra supply thereof it is that of Medical Officers of Health.

The interference of officials with their patients is always disagreeable to medical men, and the necessary interference should be done, ought to be done, and can be done, in such a way as to reduce the unpleasantness to a minimum. When the officials have tact and sympathy, the "interference" readily passes into spontaneous co-operation between medical man and public officer — a co-operation that pleases the individual, as it promotes the public good.

The late Dr. MacCosh.

It is with sincere regret that we chronicle the death of Dr. Andrew MacCosh, the well-known surgeon of the Presbyterian Hospital, New York. He sustained a fracture of the base in a carriage accident, and succumbed a few days later in the hospital with which he had been so long connected. Although born in Belfast, he was a Scotchman, and, in spite of having lived in the States for the greater part of his life, he retained the accent and many of the characteristics of his nationality. He frequently attended and took part in the proceedings of surgical congresses on this side of the Atlantic, and only a few months ago he visited the Royal Infirmary. He was a dexterous and resourceful surgeon, and a universal favourite.

The New Vienna Maternity.

Professor Caird, in his opening address, referred to a minute of the Infirmary Managers in 1818, in which they expressed their desire to make that institution "the perfect model." In this connection it is interesting to read the account of the New Maternity Hospital which was opened recently by Professor Schauta in Vienna.

The building consists of two main portions and a small isolation

pavilion. The two main buildings are identical in design. Each has a frontage of 434 feet long, from which run three wings, one 92 feet long and the others 131 feet. The buildings are four storeys high. On the ground floor there is an outpatient department for both gynæcological and obstetrical patients, in which there are nine compartments for examination and treatment; there is also a large waiting-room and dressing-room. There is another ward with 7 beds for emergency maternity cases. In the east wing is a residency for 18 students. The west wing and most of the main building contains wards for patients before delivery, to the number of 48 beds.

On the first storey there is a large labour ward of 13 beds, a smaller one of 3 beds, an operating-room, puerperal wards for 50 patients, 3 laboratories and a museum.

In the second storey the main building and east wing are identical with the floor below, except that there is a ward of 23 beds for gynæcological patients. The west wing contains an operating theatre, anæsthetic-room, sterilising-room and 3 single-bedded rooms for patients immediately after operation. In the middle wing are the living rooms of the assistants, a small museum and a large lecture-room seating 200.

The third storey has a gynæcological ward of the same size as the ward below, and the west wing is again confined solely to gynæcology, with an operating-theatre arranged exactly as below. The rest of the main building and the east wing are devoted entirely to patients in the puerperium. In the middle wing are the assistants' rooms; the rest of the middle wing is the upper portion of the lecture-room, which is carried through the two floors.

The total number of beds for puerperal patients in *each* building is 140, but one ward is kept vacant so that a change may be made every fortnight, each ward being kept empty in rotation. This applies also to the labour wards. The isolation rooms are used for patients who have required operative interference or are suffering from complications, such as tuberculosis, &c.

In each building there are 58 beds for gynæcological patients.

The lecture-room is unique in that it is arranged with the seats rising on either side of a large window measuring $25\frac{1}{2}$ feet by 13 feet, so that minor operations can be carried out without the onlookers interfering with the light, whilst they are in a position to see all that is done.

There are 3 laboratories for chemical, histological and bacteriological research, also an X-ray room and photographic department, and a room especially set aside for experimental work. Attached to the operating-theatres are small rooms for immediate examination of tumours, &c.

On every floor, attached to each set of wards, are small kitchens, service-rooms, nurses' rooms, bathrooms, &c.

All the floors are tiled, the walls and ceilings are painted with ripoline, and the fact that all corners are rounded admits of easy cleaning. The rooms are lighted direct, and heating is conducted from a central apparatus. Furniture is mainly of iron and glass.

The isolation block consists of two storeys, each of which has 6 rooms with 18 beds in all. It has also an operating-room on each floor, with small laboratory, kitchen, nurse's room, bathroom, &c., attached.

The total area available is $11\frac{1}{2}$ acres, and only about $1\frac{3}{4}$ is built upon. The rest is laid out in gardens.

In front of the isolation pavilion a monument has been erected to the memory of Semmelweiss, presented to the University by Professors Chrobak and Schauta.

Those responsible for the Vienna Maternity seem to be following in the footsteps of those old managers of the Royal Infirmary referred to in our opening sentence, and perhaps the example which has stimulated Vienna may be reflected back again.

Medical Defence Union of Scotland.

THE Sixth Annual Report of the Union will be read with interest by all, and the evidence of its pages shows how really necessary it was. We are not extravagant Home Rulers, but we think all must admit that a council sitting in Scotland is more competent to deal with Scottish difficulties than one, however eminent, elsewhere.

The Union has, with one exception, had no sensational cases to deal with, but the few words under the heading "Result" in the specimen cases are often pregnant with meaning. "Defence Agreed to—Intimation made to Claimant's Agent that the Union would Defend—Action Abandoned" is only fifteen words, but what a weight of trouble they mean removed from the shoulders of one member of our profession.

Two hundred and forty new members have joined the Union this year, and the membership now stands at 1177.

If the members of our profession only realised how much membership of such a society means, the membership would be at least twice as large.

The steady growth in the funds indicates how wise has been the management of the Union. Mr. W. Findlay, 155 St. Vincent Street, Glasgow, the Secretary, will be glad to supply all information to intending members.

Appointment.

DR. ROBB of Paisley has been elected Medical Officer of Health for the combined counties of Midlothian, Linlithgow and Peebles in succession to the late Dr. Brock.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the College, held on 15th December, the following gentlemen were elected Fellows:—John Henry Board, M.R.C.S.Eng., L.R.C.P.Lond., Bristol; Vincent Theodore Carruthers, M.B., Ch.B., Lieut. R.A.M.C.; Stanley Dodd, M.B., M.R.C.S.Eng., London, W.; William James Fraser, M.B., Ch.B., Lieut. I.M.S.; Thomas M'Laren Galloway, L.R.C.S.E., Kirkcaldy; James Turner Gunn, M.B., Ch.B., Edinburgh; David Colvin Henry, M.B., Ch.B., London, S.W.; Ian Dalrymple Clark Howden, M.D., Dover; William Wilfrid King, M.R.C.S.Eng., L.R.C.P.Lond., Bath; William Leslie, M.D., Alloa; Dan M'Kenzie, M.D., London, W.; Archibald Cotterell M'Master, M.B., Ch.B., Edinburgh; David Mann, M.B., Ch.B., Edinburgh; George Porter Mathew, M.D., M.R.C.S.Eng., Port Elizabeth; John Patrick, M.B., C.M., Glasgow; Charles Augustus Eamonson Ring, L.R.C.S.E., Devon; Thomas Ritchie Rodger, M.D., Sanquhar; John Alexander Scott, M.D., Edinburgh; Miles Charles Cariston Seton, M.B., C.M., Edinburgh; Walter Heaton Smith, M.R.C.S.Eng., L.R.C.P.Lond., Wigan; Robert Henry Walton, M.B., Ch.B., Auckland; Horace Walshman Ward, M.R.C.S.Eng., L.R.C.P.Lond., Birmingham; William Richard Spencer Watkins, M.B., Ch.B., Penygraig, Glamorgan; and Alexander Waugh Young, M.B., Ch.B., Edinburgh.

OUR FOUR FOREFATHERS IN MIDWIFERY.[1]

A Historical Study.

By WILLIAM STEPHENSON, M.D.,
Professor of Midwifery, University, Aberdeen.

There is interest and value in the endeavour to trace the growth and workings of the obstetric mind; using that phrase in a collective sense to imply the knowledge possessed at any one period; the principles deduced therefrom; the mental conceptions, true or false, thus formed; and how from time to time the attitude and conduct, in relation to pregnancy and parturition, have been determined.

The aim is to present, not a chronological narrative, but a critical review of portions of our obstetric history, the general features and outstanding facts of which are well known, and need but a reference.

With years, the course of ordinary labour does not change;

[1] The Presidential Address delivered at the opening of the session 1908-9 of the Obstetrical Society, Edinburgh.

the complications and dangers attendant upon parturition are the same now as of old; many of the problems our forefathers dealt with are problems of to-day; operative procedures, version, craniotomy, forceps, induction of labour, the Sigaultian operation, Cæsarean section, all are, more or less, venerable by age; but how different the mental light that plays around them now!

Opinions are ever changing, principles are modified, mere sentiment and doubtful doctrines have less sway; the intellectual atmosphere is clearer; but sheer mechanical might and hurry are marring the work now.

To trace the influences that produce such changes is to get at the gist, or the Geist, of history; but there are limits in an address. During the time at our disposal, however, some of the pathways of progress may be followed.

Chief in their bearings on practice, inter-penetrating the whole subject, are the knowledge of the Mechanism of Labour, and the conception of Uterine Action. Historically, that of the former preceded the latter; the lie and the mode of passing of the head were known before the nature of the expelling force was understood.

Regarding the mechanism, considerable unanimity exists: yet, in text-books of to-day, archaic views and errors are to be found, transmitted, without thought, from author to author. This pathway, however, we cannot, for the present, follow.

Concerning the parturient force, knowledge came with slow and stumbling footsteps. Yet a truer conception of uterine action was held towards the end of the 18th and in the early years of the 19th century than for fully sixty years thereafter. Certain views of the early writers were overlooked for a time, error crept in, the effects of which are still perceptible in present-day writings.

By accuracy in the conception of, and personal intimacy with the mechanism, the right hand acquires its cunning in the management of labour, and adroitness in the use of artificial aid. At the same time the left hand must be ever on guard over the uterus; on a true conception of its spontaneous action largely depends the safety of the mother in the prevention and speedy arrest of hæmorrhage.

In the 18th century began with midwifery the gradual transition from idle theory and arbitrary custom, to reasoning from real facts and accurate observation. By the middle of the century a solid and enduring foundation to the science and art

was laid by the work of two men, contemporaries and friends, fellow Scotsmen, and natives of the same county. They possessed true scientific insight, and employed scientific methods, but each worked on different lines.

The contributions of WILLIAM SMELLIE (1697-1763) were eminently *practical*, based on close observation of nature *in action;* those of WILLIAM HUNTER (1718-1783) were purely *anatomical*, depicting the still life of the gravid uterus, in engraved plates, marvellous in accuracy and beauty of delineation. His scientific work was excellent, its influence has been great and lasting; it drove from the obstetric mind many a fanciful and grotesque notion regarding intra-uterine life, and provided a true knowledge of the various structures involved in pregnancy and labour.

In practical matters, however, he was timid and not initiative; his mind was deeply imbued with the doctrine, then and for long after prevailing, of implicit faith in Nature's forces to overcome obstacles. He held, with others of his time, that long forbearance should be exercised, and that interference was justified only by the actual approach of dangerous constitutional disturbance.

Against universal opinion he had the courage to put to the test this doctrine of non-interference in the third stage of labour. The trial promised well at first, but, ere long, sad experience taught him that the expulsion of the placenta could not, with safety, be left indefinitely to the unaided forces of Nature. The profession is indebted to him for this experiment, so carefully carried out; it was strictly logical, and so decisive that it has never been repeated. It was long, however, before the obstetric mind realised that the doctrine was likewise fallacious regarding labour generally.

The use of the forceps he looked upon with grave doubts. "I admit," he said, "that the forceps may sometimes be of service. . . . I have sometimes used them with advantage, . . . yet I am clearly of opinion, from all the information which I have been able to procure, that the forceps (midwifery instruments in general, I fear) upon the whole has done more harm than good."

SMELLIE, by his sagacity and keen observation, made manifest to the ken, if not the understanding of men, the relations between the fœtal head and the pelvis. His account of the mechanism of labour is not written with the verbal precision afterwards gradually attained; but that he truly grasped the subject is clear—the

picture he presents is drawn in simple comprehensive lines, true to nature, and without the over-elaboration and inaccuracies of later writers. He was the first to recognise the various positions in which the head may lie, and the movements imparted to it in its passage through the pelvis. He demonstrated the necessity of occipital rotation, and the relative facility or the difficulties dependent upon the particular lie of the head. He discovered also that in such difficulties the rotation could be aided by the fingers or the forceps. This instrument, it is well known, he greatly improved, and advocated its use in the high as well as the low operations.

Whilst these pregnant additions to knowledge were being made, adverse influences were at work to hinder their acceptance. The turmoil with the midwives was at its height; the jealousy or prejudice, and the acrimonious disposition of his less-learned rivals vainly tried to belittle their value; the ignorance of the general practitioner was immense; a generation and more had to pass before the value of his teaching was duly appreciated.

At this period, taking the views of Smellie as representative, ideas regarding the uterus were in a vague and fogged condition. It is difficult for us, with present-day knowledge, to realise the dim light in which men then worked. The pain and straining at expulsion was evident enough; and the simple phrase "labour pains" was sufficiently descriptive, without theorising. The thickness of the walls and the size of the uterus, relative to the period of gestation, were noted; but the composition of the walls was wrongly interpreted. At that time injection of the blood-vessels and lymphatics was the only known means of investigation, and this led the mind astray.

Smellie thus describes the structure: "The thick substance of the uterus is composed of a plexus of arteries, lymphatics, veins, and nerves, . . . without any muscular fibres, except such as compose the coats of the vessels." And in the next paragraph he remarks: "The substance of the uterus appears more compact and pale than that of muscles; or, if it be muscular, at least the fibres are more close, and more intricately disposed, than in other muscular parts."

Hunter, by his keener scientific discernment, had no difficulty in pronouncing the uterus to be strongly muscular, and depicted what he believed to be the arrangement of the fibres. Nevertheless, Smellie's idea continued to sway the obstetric mind for fully a generation.

At this time another befogging notion was generally accepted. Parturient action was believed to be due to "stretching of the fundus in proportion to the augmentation of its contents," the cervix also, from the third month, participating in the stretching, till in the ninth month the neck of the womb is altogether distended."

Smellie's description of a labour pain is, for one so observant, amazingly inaccurate.[1]

> "Now that the whole substance of the uterus is stretched, the neck and os internum, which were at first the strongest, become the weakest part of the womb, and the stretching force being still continued by the increase of the fœtus and secundines, which are extended by the enclosed waters in a globular form, the os uteri begins gradually to give way. In the beginning of its dilatation, the nervous fibres in this place, being more sensible than any other part of the uterus, are irritated, and yield an uneasy sensation, to alleviate which, the woman squeezes her uterus by contracting her abdominal muscles, and at the same time filling the lungs with air, by which the diaphragm is kept down; the pain being rather increased than abated by this straining, is communicated to all the neighbouring parts, and by this compression of the uterus the waters and membranes are squeezed against the os uteri, which is of consequence a little more opened" (p. 112).

On another page he says: "At every pain the uterus is strongly compressed by the same effort which expels the contents of the rectum at stool" (p. 207).

Thus, throughout the whole process, he attributes no expulsive action to the uterus itself; and yet, in various parts of his treatise, he makes use of the expression, "*the uterus contracts.*" The following examples explain his meaning:—"By the help of strong pains the child will be forced along, *as the child advances the uterus contracts*" (p. 223).

"The mouth of the womb being sufficiently opened, the membranes are forced into the middle of the vagina, *then the uterus contracts* and comes into contact with the body of the child" (p. 209). "As the waters are discharged, *the uterus contracts itself and grows thicker*" (p. 101).

The action he thus indicates is not one of expulsion, but the shrinking in the capacity of the uterus in proportion to the lessen-

[1] For convenience of reference, the edition of Smellie's *Midwifery* made use of is that edited by Dr. M'Clintock, published by the New Sydenham Society, 1876.

ing in bulk of the contents. Here, be it noted, is the germ, thus early recognised, of what with scientific accuracy is now termed *retraction.*

The celebrated Dr. Thomas Denman (1733-1815) writing in 1782—thirty years after the publication of Smellie's work—retains some of the old ideas, but makes an important advance by recognising the "expulsatory" action of the uterus. The structure of the organ he describes in the same terms as Smellie, but along with vessels, lymphatics and nerves he includes muscular fibres, adding, however, that when distended by pregnancy they are "*very thinly scattered.*" Further, he stumblingly remarks: "It does not seem reasonable to attribute the extraordinary action of the uterus at the time of labour to its muscular fibres only, if we are to judge of the power of a muscle by the number of fibres of which it is composed." Nevertheless, he correctly divines the situation. Already the uterus was known to retract as the contents diminish; now he recognises that expulsion also is due to uterine action. The following passage, displaying much foresight, is notable:—

> "At the time of labour a new principle supersedes those of distension and ascent. This gives a disposition to the uterus to exclude whatever it contained in its cavity, and the effect produced is in proportion to the energy of the principle and the power of the uterus. A perfect intelligence of this principle and of the mode of its operation would be of infinite use in practice, as we might be enabled to suppress the action thereby occasioned when premature, moderate it when too violent, strengthen it when too feeble, and regulate it in a variety of ways conducive to the welfare of our patients. On the knowledge we at present have of the manner in which this principle operates, and the circumstances by which it is influenced, the assistance which science and dexterity can give in cases of difficult parturition very much depend"[1] (p. 189).

Further, Denman clearly differentiates the two actions of the uterus, and when discussing questions refers to them under different terms, showing that he regarded them as distinct. The one, expulsive, he calls "*the action of the uterus,*" and uses the phrase as synonymous with "labour pains;" when speaking of the other, the permanent contraction, he, like Smellie, says "*the uterus con-*

[1] *Introduction to the Practice of Midwifery.* Part the First. By Thomas Denman, M.D., Physician-Man-Midwife to the Middlesex Hospital, and Teacher of Midwifery in London. London, 1782.

tracts." "This," he remarks, "may, in fact, be considered as the exercise of that inherent disposition in the uterus by which its efforts are made to recover its primitive size and situation."[1]

From this period the powerful muscular nature of the uterus and its functions were no longer doubted. In 1784 Professor Hamilton, Senior, of Edinburgh, speaks of "the uterus itself as a hollow muscle."

In the early years of last century Dr. John Burns, who was then Professor of Midwifery in Glasgow, not only upheld the two-fold action, but also directed attention to the practical bearing of this view. Discussing the subject of hæmorrhage before or during labour, and referring to the temporary and permanent actions, he remarks:—

> "It is chiefly to the permanent or *tonic* contraction that we are indebted for the stoppage of hæmorrhage, because this contraction lessens the size of the vessels and keeps up a firm pressure of the uterine surface upon the ovum until the pains have accomplished the expulsion or delivery of the child. The pains could not do this good, for coming only at intervals their effect would be fugacious. On the other hand, the permanent contraction would not be adequate to the purpose without the pains, for these temporary paroxysms excite this action to a stronger degree, and by ultimately forcing down the child accomplish delivery before the powers of the uterus be worn out."

Thus in these early days the expulsive and the retractive forces were held distinct from one another, and the management of labour was based thereon. Unfortunately, from the ambiguity of words and the indiscriminate use of the same word in more than one sense, confusion arose; retraction came to be regarded as the product of repeated contraction, and that practically retraction could be obtained only by exciting contraction.

The earliest statement I have found of this myopic view is in *Practical Observations in Midwifery*, by Dr. Ramsbotham, Senior, of London, written in 1821. Referring to the subject, he says: "*The permanent state is the result of the repeated returns of the temporary.*" From this time down to 1886, a period of sixty-five years, when Dr. Matthews Duncan read his classical paper on the subject,[2] muscular contraction alone dominated the mind, retraction became degraded and unheeded. In the discussion that followed the reading of the paper it was affirmed by successive

[1] *Introduction to the Practice of Midwifery.* By Thomas Denman, M.D. Vol. ii. (1795), p. 282.

[2] Trans. Obstet. Society, London, vol. xxviii. (1886) p. 115.

speakers that retraction is but the retention of ground gained by contraction; that without contraction there could be no retraction; and that after the uterus is emptied re-expansion does not occur, because there is no expanding force.

To discuss so important a question is beyond the purview of this address; but to keep the historical balance, the view revived by Duncan, and as now more clearly defined in the mind's eye, may be stated briefly, all the more because, even in the present day, its character and its bearing on practice have not been generally realised.

Contraction and retraction are distinct properties of the uterus. Contraction, the discharge of muscle-energy under a stimulus, is intermittent, and supplies the only uterine expulsive force. Retraction is not expulsive; it is a persistent action dependent upon the tonicity of the walls, and varies in degree. By virtue of this inherent property of the muscular sac the cavity is lessened in proportion to the diminution of its contents. Whether such diminution be effected by the natural force of expulsion or, in the absence of contractions, by artificial means, all the same in either case retraction occurs. The movement is a gradual shrinking and requires time. It restrains the circulation, and if from any cause it be defective there is in the blood-pressure sufficient force to re-expand the uterus to a dangerous degree, thus favouring hæmorrhage.

Such is the mental conception which ought to quicken and direct the management of labour. To understand its influence we turn again to the teaching of the earlier writers, who had recognised not only the distinctive effect of the two forces, but also the cognate truth that retraction is slow and must be given time. They acted accordingly.

Professor Hamilton, speaking of the *extraction* of the child after version, says: "The operation of delivery should be slowly performed."

Professor Burns remarks: "The placenta will be less apt to be retained if the expulsion of the child be conducted slowly, and the uterus made to contract fully upon it." And again he says: "Delivery therefore is not to be hurried; the steps of expulsion should be gradual. Instead of pulling out the body of the child whenever the head is born, we should rather retard the expulsion when it is likely to take place rapidly."

In the present day of haste these principles are liable to be

overlooked or purposely disregarded. And, further, they are at times misinterpreted, as in the following injunction by a recent authority. "The principle," he says, "not to deliver *in the absence of uterine contractions*, is the first point in the prevention of post-partum hæmorrhage." The older writers had a truer grip of the subject; it was not for pains they waited, but to allow time for the slow process of retraction; and experience has abundantly proved that delivery can be effected with safety "in the absence of uterine contractions," but, as they directed, the extraction must be gradual and deliberate; or, as Denman puts it, "*not proceeding rashly or affecting dexterity, but giving our heads time to guide our hands.*"

Shrewd and observant as our forefathers were, it was long ere they perceived or put in practice the stimulating and restraining influence which the hand, externally, can exert over the uterus. Smellie nowhere refers to it; in his time ignorance of uterine action, and, it may be, a feeling of delicacy, withheld them from placing the hand above the pubes. When, however, knowledge regarding uterine action increased, the use, but not the full value, of external pressure was perceived. Denman, in 1782, wrote, "To promote the separation and exclusion of the placenta, the application of the half-closed hand to the abdomen, so as to make a moderate pressure, is sometimes of use, by aiding the uterus in its contraction." One year later, Mr. Dease of Dublin recommended the same expedient in very similar terms: "Should the detachment of the placenta," he says, "not be effected in the usual time, it will be much facilitated by the operator's judiciously applying his hand to the region of the uterus, which he may excite to the necessary contraction by gentle friction." "This method," adds Dr. M'Clintock, "may justly be called the '*Dublin Method.*'" *If this be all*, then unfortunately Denman had anticipated it by a year.

In the recommendations of these writers there is but the germ of what, in course of years, has developed into a safe and efficient method; to which, however, no individual or school can strictly lay claim as having originated or perfected. It has developed gradually and taken definite form as the obstetric vision cleared. Credé's good service lay in so convincing the profession of the superiority and safety of the method he advocated that men turned from their evil ways. There was at first, however, a savour of error in what he taught.

Any method may be conducted in *apparently* the same manner, but with different objects in view, and with varying results. It is the mind that works the method, not the hands. From time immemorial delivery of the placenta has been the sole thought in the third stage. At first Credé made an early expulsion his aim, but in the course of time this was modified. Nevertheless, stimulating the uterus to expulsive action, and further aiding by direct pressure, is the dominant, and often the sole, object in the mind of many.

But the *root idea* from which the management springs is not the ready expulsion of the placenta, though that comes with it, but the prevention of an undue loss of blood, by giving support to the uterus, so long as retraction is incomplete. Hence the great, the nuclear thought is continuous, not casual, supervision by the alert grasp of the hand over the fundus, from the birth of the child onwards, and so limit the degree of expansion; for *before* extrusion of the placenta there may be an unnecessary, sometimes serious, amount of internal bleeding; and *after* expulsion there may be too free and alarming loss of blood; the supervision, therefore, must be kept up until the empty uterus is firmly set.

Kindred with the above there is in the teaching of the older writers a telling point that somehow has slipped from notice. It is unknown to many, and mentioned by few. When the placenta has been retained beyond a reasonable time, and external stimulus has proved futile, it is necessary to introduce the hand to remove the cause of retention. All concur in this proposition; but what is the *primary* object? Listen to Denman's teaching: "Whether on the introduction of the hand we found the placenta separated, or whether it was necessary to separate it, *we are not to extract it immediately, but to wait till the uterus begins to contract*, and then to withdraw the hand, including the placenta, more quickly or slowly according to the degree of contraction."

Burns also strongly inculcates this principle. "Our primary object," he says, "is not to extract the placenta, but to excite the uterus to brisker action;" and he further adds an important point: "Until the fibres contract neither the hand nor the placenta should be withdrawn. But the moment we find the uterus beginning to contract, the placenta is to be removed, even if the hand should require to be reintroduced, *as emptying the uterus under these circumstances promotes further contraction.*"

Neither of these writers, in their emphatic recommendation of this treatment, makes mention of the simultaneous use of the external and internal hand. The beneficial effect of pressure and friction over the uterus is referred to under other circumstances, but the combined method here is not mentioned. Thus gradually does method advance point on point towards perfection.

The recommendation, above mentioned, to empty the uterus to promote retraction, is in strict accordance with the law "in proportion to the bulk of contents," and applies equally to undue distention from blood as to retained placenta. The hand, however, need not be withdrawn further than the os uteri, sufficient merely to slip the placenta or blood clot past the wrist into the vagina. Repeated withdrawals and reintroductions should be avoided. Denman wisely remarks: "The hand when introduced should never be (wholly) withdrawn till the end for which it was introduced is, if possible, accomplished."

Most cases of too free bleeding, if no constitutional effects are showing, can be controlled by the strenuous action of the external hand, together with, if need be, swabbing the vulva with very hot water.

But *active hæmorrhage* brooks no delay; evil effects therefrom gather rapidly; prompt action by the most reliable means is peremptorily demanded. The surest and readiest expedient is, what the early writers taught, the introduction of the hand in uterum. From this simple and direct course the mind has sadly wandered. From fear of a possible risk men dally with an imminent danger; what should at once be done is regarded as a last resort.

With contraction, and contraction alone in view, the main thought too long has been to stimulate the uterus to contract by hot douching and less reliable means, each of which occupies time in preparation and administration. A fatigued uterus is ever slow in response, and further, contractions when obtained, are often delusive; the hæmorrhage is stayed for a time, but relaxation follows, and, with it, the risk of bleeding.

Moreover, expulsive action need not be waited for, it is not needed; the hand introduced can speedily empty the uterus if necessary. Retraction is the primary, nuclear thought, and can be secured by use of the combined hands, steadily moulding the uterus between them like a plastic shrinking mass, till it be firmly set. Peradventure, this proving ineffectual, which I have never

yet experienced, the nozzle of the douche can be passed up to the hand in utero, and hot water injected.

In perusing recent discussions on the treatment of post-partum hæmorrhage, one cannot but feel there is madness in the method advocated. Can anyone, not bereft of the reasoning faculty, believe that bearing the whole weight of their body on the abdominal aorta will make any material impression on uterine circulation so long as the ovarian arteries are left free? Compression of the aorta I have found of signal benefit, not in checking hæmorrhage, but in warding off and relieving faintness and collapse.

In this ramble through old books, a point has been reached where a halt may be called. In the middle of the eighteenth century, we have seen the science and art of midwifery emerging from the murky atmosphere and false imaginings of ignorance. We have traced the varying phases through which the conception of the uterus and its action has passed; and have indicated, more than discussed, the bearing of the older teaching on modern thought and methods.

The group of writers to whose works I have referred, and from which I have freely quoted—Smellie, Hunter, Denman, and Burns—must be regarded as strictly the four forefathers of British midwifery. Their eminence and the classical character of their works, rest on the true scientific and practical spirit that pervades their writings, on the soundness of the principles they inculcate, and on an absence of the false reasoning, the timidity, and grandmotherly advice, that mar the writings of many of their successors.

The first three names are familiar and well remembered; that of the last, Prof. John Burns, of Glasgow, I fear, is almost forgotten. And yet his work on *The Principles of Midwifery* went through seven editions, and will be found stimulating and instructing to the practitioner even of to-day. He follows closely the teaching of Denman, and develops the important subject of fatigue of the uterus and its management: that, however, opens up another pathway in the history of obstetrics, which must wait for another occasion.

A CASE OF CONGENITAL HEART DISEASE, WITH EXTREME SECONDARY POLYCYTHÆMIA AND ORTHOSTATIC ALBUMINURIA; ALSO SOME REMARKS ON POLYCYTHÆMIA IN CARDIAC CASES.

By F. PARKES WEBER, M.D., F.R.C.P.,
Senior Physician to the German Hospital, London, and Physician to the Mount Vernon Hospital for Diseases of the Chest, Hampstead.

THE patient, A. T. E., aged 22 years, is too small and young-looking for his age.[1] One would take him for a boy of 15 or 16 years. Height, 166½ cm. Weight, 41 kilogrammes. There is great cyanosis of the lips, tongue, nose, ears, hands and feet. His tongue and lips are bluish-black in colour. There is great "clubbing" of fingers and toes. Imperfect capillary circulation in the hands is evidenced by the long persistence of the white marks on the skin left by pressure. The gums bleed easily, partly owing to the presence of decayed teeth. By ordinary examination the heart appears to be of natural size, and auscultation reveals nothing abnormal except the presence of a slight systolic murmur, best heard in the middle line over the sternum, at the level of the second intercostal spaces. Röntgen-ray examination (kindly undertaken by Dr. Hugh Walsham) shows that the heart is unusually transverse in position and that there is some widening of the aortic shadow to the left. Pulse, about 88 after examination; regular. Systolic brachial blood-pressure, 100 mm. Hg. The lungs, liver and spleen seem to be normal. Repeated examination of the urine shows the presence of well-marked cyclic (postural, orthostatic) albuminuria. The urine passed about eleven o'clock in the morning contains a considerable amount of albumen, but is free from tube casts. The early morning urine, passed immediately on rising from bed, is practically free from albumen. Blood examination (capillary blood from finger) on 18th October 1908: the blood is very dark in colour; hæmoglobin (by Haldane's method), 160 per cent.; red cells, 10,300,000 in the cubic millimetre; white cells, 7000. A differential count of five hundred white cells (kindly made by Dr. A. E. Boycott) gives: lymphocytes, 17·2 per cent.; intermediates, 5·4 per cent.; large hyalines, 2·2 per cent.; polymorphonuclear leucocytes, 72·2 per cent.; eosinophiles, 2·0 per cent.; mast cells, 1·0 per cent. The red cells appear quite

[1] The patient was shown at the Royal Society of Medicine, Clinical Section, in November 1908.

normal, though the colour index is low. Dr. Walsham's skiagrams of the hands show nothing abnormal, except that the epiphyses are not yet united to the diaphyses in the metacarpal and phalangeal bones. They give no indication either of hypertrophic osteo-arthropathy or of deficiency in lime salts. Though he easily gets out of breath the patient is able to walk a mile or two slowly. He is able to help in the work of a post office in the country. The cyanosis was present at birth. During the first years of his life he often had attacks of fainting (accompanied by exacerbation of the cyanosis), which seemed sometimes to be induced by a slight knock, or by annoyance of any kind. He could not walk till he was four years old, but, apparently, learned to speak as early as other children. He has always been more or less subject to nocturnal and diurnal enuresis. The mother and father are both living and healthy, and there is no other history of congenital heart disease or any congenital abnormality in the family. The patient has a twin brother who is well developed and strong.

The association of orthostatic albuminuria with the cardiac malformation and cyanosis in this case is interesting but not surprising, as there is no doubt that the venous congestion of the abdominal viscera must be intensified when the upright position of the body is assumed.

The precise nature of the cardiac abnormality is a matter for conjecture, but it may be assumed (1) that there is patency either of the interventricular or of the interauricular septum; (2) that the commencement of the pulmonary artery is probably stenosed, or even completely occluded; and (3) that there is persistence of the ductus arteriosus, although the peculiar "wavy," "continuous" type of murmur characteristic of a communication between the aorta and pulmonary artery is absent.

What specially interests us, however, in the present case, is the extreme degree of the compensatory polycythæmia. Some authors formerly thought that, in chronic cyanosis connected with heart disease, the red corpuscles never exceeded eight millions per cubic millimetre of blood, but in congenital pulmonary stenosis and more complicated forms of congenital heart disease the following counts prove the contrary:—9,447,000 (Banholzer, 1894); 8,470,000 (G. A. Gibson, 1895); 10,540,000 (Variot, 1897); 9,860,000 (Audry, 1902); 9,084,000 (Babonneix, 1902); 9,800,000 (Fromherz, 1903); over 10,000,000 (Friedel Pick, 1904, and J. H. Drysdale, 1905); 8,320,000 (Batty Shaw, 1907); 9,630,000 (Murray Leslie, 1907); 12,720,000 (Murray Leslie, 1907); 9,000,000

(Gardère, 1908); 6,138,000 to 10,000,000 (Weill and Mouriquand, 1908); 8,500,000 (Lesieur and Froment, 1908).

The polycythæmia (polyglobuly) in cases of congenital and acquired cardiac disease is now generally admitted to be of a compensatory (conservative) nature; it is a manifestation of the attempt on the part of the bone-marrow to make up for imperfect oxygenation of the blood and tissues of the body by a numerical increase of the red cells, that is to say, of the oxygen-carriers of the blood. It represents, in fact, a vital compensatory reaction analogous to the increase of the polynuclear leucocytes in the blood consequent on streptococcal invasions, &c. E. Weil, of Paris, was the first to show that the secondary polycythæmia of heart disease is associated with an actual erythroblastic reaction in the bone-marrow. In 1901, in post-mortem examinations on two children with congenital stenosis of the pulmonary orifice of the heart and chronic cyanosis, he found that there was red transformation of the bone-marrow, microscopic sections of which showed that all traces of the normal fatty tissue had disappeared. His results have been confirmed by Mackey and others. In 1907 L. G. J. Mackey examined microscopic sections made by J. Miller from the bone-marrow of a case similar to those of Weil, and obtained similar results to Weil. The polycythæmia of congenital heart disease and chronic cardiac insufficiency represents therefore a true hyperplasia of the erythrocytes and of the erythrocyte-forming tissues of the body and is, in fact, analogous to the myocardial hypertrophy found in conditions throwing abnormal work on the whole or a portion of the musculature of the heart.

Of course one must admit that mere concentration of the blood resulting from delayed circulation (stasis) in the capillaries may also partly account for the polycythæmia in chronic cardiac cases. The extent of this mere blood concentration might perhaps be measured and allowed for by estimating the total residue of solids in the blood-serum or in the blood-plasma (after it has been separated from the corpuscles by the centrifugal machine), as Weintraud and Senator have estimated it in cases of so-called "splenomegalic polycythæmia" or "erythræmia." But that the polycythæmia in chronic cardiac cases is to a large extent an absolute (true) polycythæmia is shown by the numerical increase of the red cells being found not only in the blood from capillaries and veins, but likewise in that from the arteries. Thus, G. A. Gibson, on one occasion, in a boy, aged 16 years, supposed to be suffering from mediastinal pericarditis, found the erythrocytes in

the arterial blood to be 7,000,000; in the capillary blood, 8,500,000; and in the blood from a vein, 10,000,000, Palleri and Mergari, in a case of congenital pulmonary stenosis, counted the red cells in capillary blood from the finger at 6,650,000; in venous blood from a vein in the arm, at 6,400,000; and in arterial blood from the temporal artery, at 5,950,000.

Furthermore, it must be remembered that such figures may make one underestimate rather than overestimate the total increase in the number of erythrocytes in the body, for we have considerable evidence indicating that, when in these chronic cardiac cases the erythrocyte count per cubic millimetre of blood is above the normal (relative polycythæmia), the total volume of blood in the whole body is likewise excessive. In favour of the probability of this view, we would adduce the congested appearance of the skin, lips and retinæ (as seen by ophthalmoscopic examination) in some patients during life, and the hyperæmic condition of their viscera at post-mortem examination. Moreover, in at least one chronic cardiac case the total volume of the blood has been estimated during life by the "carbon-monoxide method" and shown to be excessive. This carbon-monoxide method of estimating the total volume of blood in the body was first described by J. S. Haldane and Lorrain Smith in 1900, and in 1906 C. G. Douglas tested it in animals and found that the results obtained by it agreed fairly closely with those obtained by the old Welcker's method in which the blood had to be extracted from the tissues after the death of the animal. Lorrain Smith and H. L. M'Kisack, in the case of a boy, aged 12 years, suffering from adherent pericardium and chronic cyanosis, not only showed that the proportion of red cells to blood-plasma was excessive (relative polycythæmia), but also demonstrated by this carbon-monoxide method that the total volume of blood was far beyond the normal standard, so that there was undoubtedly a condition of true plethora present. The number of red cells in the cubic millimetre of blood was 6,340,000, and by the carbon-monoxide method it was ascertained that the total volume of blood in this boy's body was nearly double that of the normal standard. One may therefore conclude that the degree of "absolute" polycythæmia in cases of congenital heart disease and chronic cardiac insufficiency is not likely to be overestimated, but that, on the contrary, the absolute polycythæmia is likely to be greater than the relative polycythæmia (as estimated by an ordinary blood-count) would lead one to suppose.

Is polycythæmia a good or a bad sign in cardiac cases? Just

as hypertrophy of the walls of the heart is useful in so far as it compensates for mechanical defects in the valvular apparatus, so also is polycythæmia useful in so far as it compensates for difficulties in the proper oxygenation of the blood and tissues of the body; but just as in cardiac valvular disease great hypertrophy of the heart indicates some grave defect in the valvular mechanism, so also an extreme increase in the number of erythrocytes in the blood points to there being great impairment of the normal process of oxygenation of the body.

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SARCOMA OF FEMALE MAMMA.

By Sir GEORGE THOMAS BEATSON, K.C.B., M.D., B.A.(Cantab.),
Surgeon to the Glasgow Western Infirmary and the Glasgow Cancer Hospital.

In my two previous articles I have shown that marked swelling of the female breast may be caused by a special variety of fibro-adenoma and by the so-called hypertrophy. The third cause of excessive swelling is sarcoma, of which the following is an illustrative and typical case. The patient, an unmarried woman of 50, was admitted into my ward at the Western Infirmary on 15th April 1903, complaining of swelling of the right mamma. Her occupation was that of a cook, and the history she gave was that 6 months before, that is in October 1902, she let a round of beef fall on her right breast. It gave her a severe blow, but she thought nothing of it until a month afterwards, when she noticed a small hard lump about the size "of the head of a hat-pin" in the upper and inner quadrant of the right breast. This lump gradually increased in size, and in 2 months it had become as big as a penny coin. This was in January 1903, only 3 months after the accident. From January onwards until the date of her admission the breast increased in size with tremendous rapidity. At the end of January she consulted a medical man, who did not take a serious view of her case, and nothing further was done until 7th April, when she got further advice. The medical man whom she consulted called in a surgeon, who tapped the upper part of the tumour, drawing off a breakfast-cup full of dark brown slimy fluid. She was advised to go to hospital, and a few days subsequently she was admitted to my ward.

On her admission the right mamma had attained very considerable dimensions, as is shown in Fig. 1. The breast stood out from the chest wall and occupied the whole of the right side of the thorax anteriorly, extending beyond the pectoral fold towards the axilla. It was movable on the thoracic wall, and to the touch it had a firm but elastic feel. No glandular implication in the axilla could be detected. From the clinical history of the case and the very rapid growth of the tumour I had no doubt it was a sarcoma of the mamma, and in view of the patient's general health being good I advised its removal. This was done on 23rd April. A microscopic examination of the tumour showed it to be made up of small irregularly-shaped cells, with relatively large deeply-staining nuclei. They were seen to be arranged in irregular ill-defined areas, and in many cases a well-marked blood-

vessel could be seen forming the centre of each of these areas (see Fig. 3). Around these vessels the cells were closely packed, and from the constant presence of the blood-vessels and the concentric arrangement of the cells around them, it seemed in every way probable that the latter had taken their origin from cells in the coat of the vessels.

At the operation every effort was made to have the removal of the growth as complete as possible. The pectoral muscle was taken away with it and the axilla cleared out. The patient was in no way collapsed by the operation, and she made a very satisfactory recovery, but before long there were indications of a local recurrence of the growth. I did not consider further operative measures advisable, and she left the hospital on 10th July with unmistakable signs of tumour reappearance in the vicinity of the scar. These recurrent nodules grew rapidly and her health began to suffer. She was admitted to the Cancer Hospital in September 1903, and the extent to which the disease had reappeared is seen in Fig. 2, which was a photograph taken soon after her admission. The after-progress of the case was marked by a good deal of pain, and patient died on 5th December, worn out by suffering and weakened by the discharge from the tumour masses which eventually ulcerated. At the post-mortem no metastases were found in the internal organs, but the growth had penetrated the chest wall, causing collapse of the right lung. The liver was enlarged and had undergone fatty degeneration.

Although the female breast contains a good deal of connective tissue as one of its elements, the experience of all surgeons is that sarcomata do not occur in the mamma as frequently as carcinomata. Collected statistics indicate their relative frequency. In his Copenhagen clinique Poulsen found that of 335 tumours of the female breast only 33 were sarcomata, of which 14 were cysto-sarcomata. So in Bergmann's clinique, Gebele reported on 359 mammary tumours, 34 of which were sarcomata. When we remember, as was pointed out in my paper on "Fibro-Adenoma of the Breast," that the term *sarcoma* has been used in rather too wide a sense so as to include many benign tumours, it may be taken as a clinical fact that true sarcomata of the mamma are comparatively rare.

The case just recorded exemplifies very typically the clinical characters of the sarcomata. They commence as firm and movable nodules in the mamma, but they enlarge quickly and soften, without, however, involving the lymphatic glands, which only

FIG. 1.

Fig. 2.

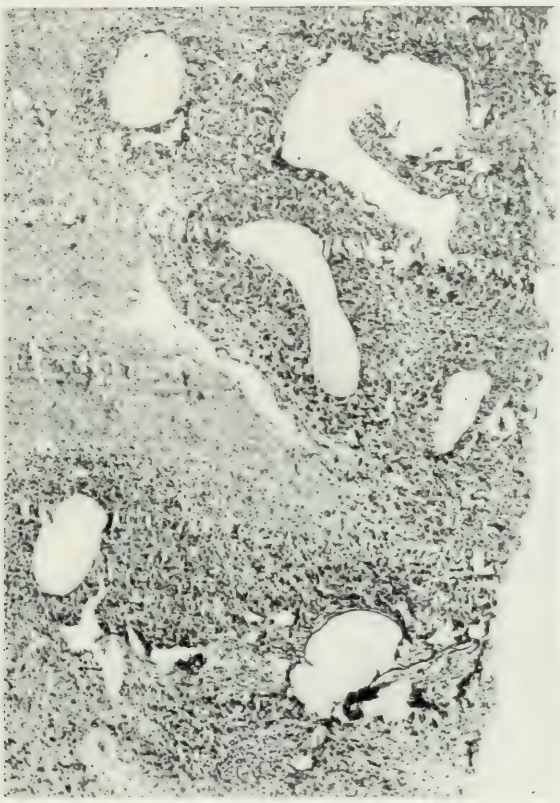


Fig. 3.

become affected in the later stages of the growths. Pain, too, is not a leading symptom of these tumours, nor is retraction of the nipple, but adhesion to the overlying skin is a constant accompaniment of them. Gross has pointed out that in a fair number of them there has been a discharge from the nipple, and he holds very strongly that age has no effect upon their malignity, and that they do not grow more rapidly in the young than in the old. That true sarcomata must be regarded as malignant, there can be no doubt. Not only do they manifest powers of local infiltration and of burrowing, that are indicative of that characteristic, but they show local recurrences and internal metastases, that are the two distinguishing features of malignancy. Probably their extensions are mainly through the blood-vessels, but the tendency varies with the different forms of sarcoma. Speaking generally, sarcomata may appear at any period of life. In the case of the mamma they are usually confined to one breast and rarely involve both mammæ.

As already mentioned, sarcomata may be solid or they may be cystic, but microscopically they also differ. The three chief varieties are—(1) Round-celled, (2) spindle-celled, and (3) giant-celled. I shall have something to say on this point subsequently, for of late years attention has been a good deal directed to a form of mammary tumour that has been designated as alveolar sarcoma or angeio-sarcoma, but that would probably be better named endothelial sarcoma. Meanwhile, as to the relative frequency of the above three varieties, Gross reports that of 176 sarcomata of the mamma the percentage was as follows:—(1) Round-cell, 27 per cent.; (2) spindle-cell, 68 per cent.; and (3) giant-cell, 5 per cent. Further, of these 176 cases no less than 50 per cent. showed signs of cystic degeneration. Another opinion that Gross's inquiries led him to hold was that these different varieties of sarcoma are associated with different periods of female life. According to him, the spindle-cell and cystic sarcomata occur more frequently in women from 20 to 40 years of age, that is during the chief years of menstrual life, while the round and giant cell are found after 40, when the physiological function of the breast has ceased. The diagnosis of a mammary sarcoma in its early stages, when it is felt as a small firm mass in the breast, is almost an impossibility clinically by the surgeon, unless there is adopted the best and most prudent course, and that is to cut down on the nodule, remove it, and submit it to the microscope. If this is not done, careful watch should be kept on the case and any rapid develop-

ment of it, or apparent implication of the skin, should rouse suspicion as to the true nature of the growth.

As regards treatment, once a tumour of the breast has been shown to be a sarcoma the sooner the mamma is removed in its entirety, with the subjacent pectoral muscles, the better. This holds good for all varieties of sarcoma. All overlying adherent skin should be taken away, and it is probably best to clear out the glandular contents of the axilla whether the glands are palpably enlarged or not. It is fair to say that some surgeons think this procedure is only necessary in exceptional cases. In the case of a small cysto-sarcoma it has been advocated that its removal with some of the surrounding tissue is sufficient, but it is not an advisable course. For permanency of cure, excision of the whole breast is safest in every sarcoma, whether it be cystic or not, and whether it be small or large. It is not prudent to follow in the case of a sarcoma a line of treatment that might be quite safe with a small fibro-adenoma. In cases of unoperable mammary sarcoma the use of Coley's Fluid has been advocated. Composed of the streptococcus of erysipelas, with the bacillus prodigiosus added, its use is based on the fact that malignant tumours frequently decrease after erysipelas. As yet it cannot be said that any real cure by Coley's Fluid has been effected, but without question improvement has been observed in a number of cases. It has a powerful constitutional effect, and half a minim of the fluid should be the maximum dose at first.

The prognosis after removal of a mammary sarcoma must always be a guarded one, although statistics seem to give more favourable results in excisions of the breast for sarcoma than for carcinoma. Thus, Horner's figures show 76·9 per cent. free of recurrences after 2 years, and ultimately 61·5 per cent. of total recoveries, but their statical value depends entirely on whether or not the cases were all true sarcomatous tumours. The spindle-celled variety of tumour is undoubtedly the least malignant. Probably the most important element in prognosis is the rate at which the tumour has grown before operation—the more rapid that has been, the more unfavourable. In fact, clinical experience teaches that the malignancy of some sarcomata exceeds that of the carcinomata, and that early invasion of the axillary glands is an unfavourable feature.

In stating, as I did, at the commencement of my paper, that the case I am putting on record is a typical one of mammary sarcoma, I should perhaps have qualified that remark to some

extent. It certainly is so as regards its clinical history. Its alleged traumatic origin, its insignificant size at first, its rapid increase, its infiltration of adjacent tissues, its extensive local recurrence, its ulceration, and its fatal termination, all make up a well-recognised picture. On the other hand, in the matter of its structure it does not conform to any of the ordinary varieties of sarcoma. It reveals microscopically (see Fig. 3) a very characteristic arrangement of the cells clustering round the blood-vessels in a way that is unusual and that has led to the view that the existence of a group of sarcomatous tumours, over and above the ordinary varieties generally recognised, must be admitted. Schmidt has made a special study of 11 of these cases and he has assigned to them very definite characteristics. The patients were over 50, more than half were married; 2 had a history of traumatism and 2 of previous mastitis. The tumours were seated primarily in the periphery, were usually single, and were sometimes small and sometimes large. They were adherent to the skin, the axillary glands were enlarged though not diseased, and they showed rapid local recurrences. He holds that these growths originate from the endothelial cells of the peri-vascular spaces, a fact which suggested to him the name of peritheliomata or endothelial sarcomata. Others have preferred to call them alveolar sarcomata or angeio-sarcomata, but both these terms fail to express the exact nature of the structural origin of the tumours, whereas the expressions peritheliomata and endothelial sarcomata do. In connection with this matter of nomenclature, it must be remembered that there are two distinct views as to the origin of the blood-vessels in such tumours. Some regard them as furnished by the local tissues they have invaded and replaced. Others, like Creighton, favour the opinion that the embryonic connective cells themselves originate the blood-vessels and blood-corpuscles as a pathological process, just as they are known to do in fœtal life physiologically. In other words, as Bryant puts it, the vessel-forming functions of the connective tissues of the mesoblast in embryonic life have been reawakened after their normal period of activity has long passed away, with the result that there has been developed a sarcomatous tumour of a sanguineous type. As to which of these views is right it is not easy to be dogmatic, but to tumours formed according to this latter theory the term perithelioma is best applied, while the expression endothelial sarcoma is more applicable to the view that they have sprung from the endothelium of the peri-vascular spaces of the pre-existing blood-vessels.

SOME NOTES ON ACUTE RHEUMATISM IN CHILDHOOD.[1]

By HORACE C. COLMAN, M.D., Broughty-Ferry.

ACUTE rheumatism is always an interesting disease, both from its many ways of showing itself and from its varied consequences. The interest has, I think, been deepened in recent years by the researches of Paine, Poynton and others, who have shown, pretty conclusively, that acute rheumatism depends upon a diplococcus. I shall not in this paper discuss the bacteriology, but the various papers on the subject are full of interest, leading up as they do to the demonstration of the diplococcus in the cerebral cortex in a fatal case of chorea following an attack of acute rheumatism.

Much remains to be learnt about the organism and its habits, and just as it has been shown that the pneumococcus and gonococcus can work havoc outside what once was considered to be their allotted sphere, so I believe it extremely probable that the future will prove that to the organism of rheumatism are due many digestive disturbances at present obscure in their origin.

Whenever the bacteriology of a disease liable to recurrence is discussed, this question always occurs to me: What are the organisms doing when there is no active manifestation of their presence? Where are they?

We talk of rheumatic subjects. Do these unfortunate people suffer a fresh invasion from outside at every attack, or do they harbour the organism somewhere?

A picture presents itself to my mind of a sort of Cave of Adullam or no-man's-land, somewhere in the portal system, whither organisms of vicious propensities, defeated by leucocytes, opsonins, drugs, etc., retreat to sulk and recuperate, whence, favoured by chance, such as the destruction of their antagonists by a chill, they may sally forth and once more ravage the body generally.

I spoke just now of rheumatic people. Do we not all know the rheumatic child? Very often fair-haired, with a good complexion; keen, clever, easily taught, generally made much of, subject to night terrors, variable in appetite, and with an easily-disturbed digestion; in short, a child we describe as nervous and highly strung when we like him, and neurotic and fidgety when we do not.

I have formed the opinion, very likely on too slender grounds,

[1] Read before the Forfarshire Medical Society.

that fully-developed rheumatic fever is not so frequently seen in this district as in some others; whether that opinion be correct or not, all will agree that rheumatic fever with multiple arthritis is rare in young children.

On the other hand, acute affections, rheumatic in origin, are common. Tonsillitis is well known, pharyngitis is nearly as common, but perhaps less frequently noted. "Growing pains," I am certain, are rheumatic in origin, and deserve more attention from physicians and sympathy from parents than they often receive.

Chorea often occurs with no history of rheumatic fever, but inquiry will almost always disclose a history of some rheumatic affection. Then there are those curious subcutaneous nodules found over bony ridges and prominences, varying roughly in size from a hemp seed to a small bean. These are said to occur at Great Ormond Street Children's Hospital in nearly half the cases of acute rheumatism, and to be significant of acute cardiac mischief. Though I saw them there often, I have failed to find them here during the past 10 years. I have already indicated my belief that some derangements of digestion in children are of rheumatic origin.

It is not, however, on these points that I wish to speak to-night, but rather to draw attention to a group of cases in which the outstanding feature is a rapid and early dilatation of the heart, especially on the left side, and in which endocarditis, arthritis and other major rheumatic features are slight or absent.

The first case of the kind I met with was a boy of 12 or 13. His previous history was excellent, the immediate history was as follows:—One day he felt seedy and vomited once or twice, the next he rested in bed, and the next seemed quite well until the afternoon. Then after a short walk in the garden he collapsed and fainted.

I saw him soon after. He was pale, but felt no pain, and was quite comfortable. The temperature was high and the pulse very rapid. The heart was much dilated, but there was no murmur and no joint trouble of any sort. On inquiry, I found that he had been much troubled with "growing pains" for some time. With rest and salicylate of soda he made a speedy recovery.

Three years afterwards I had an opportunity of examining him and found him apparently quite sound, and free from all rheumatic trouble.

A similar case was that of a boy who was neurotic and

fidgety. When I saw him he was in bed, as his mother thought his stomach out of order and was uneasy about him. His temperature was high, his pulse rapid, and there was slight tonsillitis but no joint trouble. His heart was very much dilated. The mother volunteered the statement that he had been much troubled with "growing pains" for some time, severe enough to make him cry. Rest and salicylate of soda restored him to good health.

One interesting change followed from this illness. Previous to treatment he had been most difficult to feed, and required coaxing at every meal; after a course of salicylate of soda he developed and maintained a large and healthy appetite.

The last case I wish to describe was interesting to me in that I knew the child well, saw him early, and was able to follow the illness closely until convalescence was established. He was a boy 6 years of age, of the nervous and highly-strung type. On Sunday he was apparently in the best of health, none the worse for a garden party the day before. On Monday he was kept in bed, as he had been restless all night and had vomited in the early morning. I saw him about 11. He was in no pain then, and had none at any time after, but during the night he had complained of his legs being stiff. His temperature was 102°, pulse 144, irregular and of low tension; the heart was dilated so that the left border was 1 inch outside the nipple line; the impulse was very diffuse; there were no murmurs, but the second sound was accentuated. His breathing was rapid, but without distress. Shortly after my visit and contrary to my orders he was lifted up into a sitting position, and was said to have turned very blue.

During the day his condition was very alarming, and Professor Stalker saw him with me in the evening. Happily there was a satisfactory response to salicylate of soda, and absolute rest, as shown by the reduction of temperature, slowing of the pulse, and, above all, by the decrease in the dilatation. In addition to the salicylates he had small doses of nux vomica and digitalis after the first 48 hours. It is of interest to note that for the first 48 hours he almost invariably woke up from a sleep screaming—a point of importance in connection with the "night terrors" so often manifested by these children. In a few days a systolic bruit appeared at apex and base, the latter heard best over the aortic orifice, the range of conduction corresponding with that of murmurs produced at that orifice. By the end of

4 weeks there was no dilatation, and the murmurs soon disappeared, leaving only an occasional reduplication of the second sound. Twice in the next 3 weeks rebellion against the policy of rest resulted in dilatation and return of the apical murmur, but still one hoped that further rest might eventually lead to perfect restoration of the heart.

Now, more than 2 years after the illness, the boy is attending school, apparently in perfect health.

I should have mentioned that 3 months before the illness began I attended the boy for a persistent tonsillitis and pharyngitis, and after that for some liver derangement.

I have notes of 7 other cases, all with certain features in common, varying in degree, namely: an illness more or less acute with marked dilatation of the heart at the beginning, and a history of some previous or concomitant rheumatic affection; in 2 cases there was a history of typical rheumatic fever some years before.

I would lay particular stress on the dilatation occurring at the very beginning of the illness—a point which differentiates these cases sharply from those where after some exhausting illness dilatation of the heart appears.

I think mild cases of this nature may easily be overlooked, and, on the other hand, that to a severe and overwhelming attack of rheumatic myocarditis may be attributed some sudden deaths in children.

In text-books there is not much stress laid on the importance of this early dilatation of the heart—attention is paid more to endocarditis. Poynton and Lees alone draw attention to dilatation as being the earliest warning of rheumatic carditis.

Several of these cases occurred in close succession, and I began to think that acute dilatation of the heart at the beginning of an illness was always of rheumatic origin. I have, however, seen 2 cases where I could discover no signs of rheumatism. One was associated with marked jaundice, and the other seemed to be dependent on nervous causes. Both recovered completely.

I have seen two cases and two cases only at the beginning of acute pneumonia in children. One of these began with delirium, and had a tender and slightly swollen knee, and until a small patch of consolidation appeared in the lung I thought he too was rheumatic. Even yet I sometimes wonder if that little patch was not rheumatic in origin, for broncho-pneumonia is an occasional complication of acute rheumatism.

For 3 years I have looked for dilatation of the heart at the beginning of every case of acute illness in children, and except for those mentioned above have failed to find it. I thought scarlet fever might furnish some instances, but I have looked without success. In one case, after a fortnight's illness, serious dilatation of the heart occurred. This boy was distinctly of the rheumatic type, and I have recently heard that his younger sister, now in the south of England, has been seriously ill with "suppressed rheumatic fever affecting the heart."

The prognosis of cases such as I have described must be doubtful. Many considerations are involved—the treatment immediate and remote, the mode of life and social circumstances, especially the care for a year or two after the illness. Properly treated at the time the immediate outlook is good, though some succumb. I have seen no fatal instance.

I hope to be able to watch some of my cases as years go by, and to observe what result, if any, the illness has on their lives.

One boy, a visitor here, whom I saw recently, a year after the initial illness, has an intermittent pulse, and I was told was breathless on going upstairs and disinclined for exertion, but I could discover no valvular defect.

A brief account of an adult patient of mine may throw some light on what the future may be for some of these children.

A man, aged 36, a master baker, temperate in all things except work, and very healthy, has twice at an interval of a year had a fainting attack on rising in the morning or very soon after, and the second was accompanied by a convulsion. Everything showed that the attacks were cardiac, but there was no valvular lesion, and each time rest seemed to put him right.

From his relations I obtained the knowledge that in childhood he had an illness with rheumatic pains and some affection of the heart.

In cases similar to those I have described, lies, I believe, the explanation of many adult cases of heart disease, from whom we can elicit no history of rheumatic fever. The original illness was not recognised as rheumatic, or was too slight to be impressed on the memory, but, notwithstanding, some damage was done to muscle or valves, or both, and manifests itself as time passes.

Anything I say on treatment must be brief.

The first requirement is rest, bodily and mental, absolute

and prolonged. The duration must vary according to circumstances, but it is better to overdo it rather than the reverse.

Opinion varies greatly as to the value of salicylate of soda in endocarditis.

In cases such as I have described I am firmly convinced of the great value of the drug. Strychnine and digitalis are valuable, especially the latter, but its use requires careful and daily watching. Small doses of bromide I have found most useful in the early stages; these children are usually excitable, and the bromide enables them to rest much better. Later, the necessary drug is iron, given with or without the salicylates. I prefer the ammonio-citrate of iron, but probably any easily assimilated preparation is equally good. I have found that both iron and salicylates are readily taken by children in ordinary aerated lemonade, and, given in this way, medicine time is looked upon by these children as one of the most pleasant episodes in a weary illness.

As to diet, I need only say that it should be simple and nutritious, and that every care should be taken to avoid any flatulent distention.

CLINICAL RECORDS.

CASE OF GALL-STONES COMPLICATED BY SUBACUTE PANCREATITIS TREATED BY DRAINAGE OF THE GALL-BLADDER.

By C. W. CATHCART,
Surgeon, The Royal Infirmary.

Mrs. K., aged 43, was admitted to Ward 15, Royal Infirmary, on 1st July 1908, suffering from indigestion and almost constant pain in the epigastrium.

History.—For the last seven years she had had two or three attacks of biliary colic every year. From these she made good recoveries up to the last attack, which was six weeks before admission. After this attack the pain had continued and she was still confined to bed.

There was an area of resistance and much tenderness extending across the epigastrium and down to a point midway between the umbilicus and the ensiform cartilage. There was no jaundice.

The case was diagnosed as one of gall-stones, with subacute inflammation round the gall-bladder, following the last attack.

Operation, 3rd July 1908.—When the abdomen was opened the area of tenderness was found to be occupied by a mass of omentum, somewhat congested, and studded over with opaque white spots. These were firm and, in some cases, felt almost calcareous. The condition was recognised to be one of fat necrosis, secondary to subacute pancreatitis. The omentum was adherent to the anterior abdominal wall and to the duodenum and bile ducts, but there were no adhesions to the gall-bladder itself. Owing to the adhesions of the omentum, which it was thought better not to disturb, the pancreas could not be adequately palpated. No gall-stones could be felt in the somewhat distended gall-bladder, nor in the bile ducts.

The gall bladder was drawn into the wound, opened and drained in the usual way.

Bile flowed freely from the fistulous opening in the gall-bladder after the second or third day following the operation.

From time to time small gall-stones (about twenty in all) were discharged along with the bile.

The patient improved steadily from the date of the operation, and when she reported herself in November, was quite free from pain, and able for her ordinary household duties.

A day or two after the operation Dr. Chalmers Watson kindly examined the urine for Dr. Cammidge's pancreatic reaction and found it well marked. Shortly before the patient left the hospital, *i.e.* about two months later, when her local and general conditions were greatly improved, the urine was found to have lost the pancreatic reaction.

The case is interesting as affording a confirmation of Mr. Mayo Robson's contention that great benefit is often obtained in cases of pancreatitis from drainage of the bile ducts. In this case the gall-stones which escaped by the biliary fistula during convalescence had probably been in the gall-bladder, although they were not recognised by palpation at the operation.

EXTROVERSION OF BLADDER—IMPLANTATION OF URETERS IN RECTUM.

By ALEXIS THOMSON,
Assistant-Surgeon, Royal Infirmary.

THE patient was a boy aged nine, who was admitted to the Deaconess Hospital on the 15th March 1905 from Dr. Gatenby of South Bank, Yorkshire. Until the age of four he was believed to be a girl, and

even after his sex was discovered the female dress was continued, because it was less irritating to the exposed mucous membrane of the bladder, and he was less incommoded by the constant dribbling of urine. The malformation was typical in every respect, and a skiagram showed the absence of the pubic bones at the symphysis. He walked with abducted and everted thighs. The scrotum was almost flush with the perineum, the testes were usually visible outside the external ring on either side, and the penis was dwarfed and usually applied against the exposed posterior wall of the bladder; when the penis was drawn down, the urethra was seen as an open gutter.

He was kept in bed for a week; the mucous membrane of the bladder, which was much inflamed, was irrigated and cleansed, and he was given five grains of urotropine every four hours. On the 23rd March 1905, with the help of Mr. W. J. Stuart, the operation usually associated with the name of the late Mr. Peters, of Toronto, was performed. A No. 5 rubber catheter, with the terminal portion cut off, was inserted into the mouth of each ureter for the distance of an inch, and fixed in position with a fine silk stitch; the mucous membrane around the ureteral opening was outlined with scissors, and the wound gradually deepened through the remaining coats of the bladder, until 4 cms. of the ureter were projected from the wound. The terminal portion of ureter was then drawn through the anterior wall of the rectum, and this was done on both sides; the rest of the bladder was left alone, and the wounds were packed with iodoform worsted. The ureters functionated well in their new position, and on the first few days after the operation he asked for the bedpan about every two hours while awake, and passed about one ounce at a time; while asleep the urine was passed in bed. On the third and fourth days after the operation there was a rise of temperature to 103°, but his general condition was very little disturbed thereby. Gradually the tolerance of the rectum increased, and from passing two to four ounces every two hours, which was the average at the end of a week after the operation, at the end of a fortnight he would sometimes pass as much as eight or ten ounces at a time. At the end of three weeks he walked about the ward, and at night his bed was dry from 7.30 till 5 A.M., that is to say, there was continence for nine and a half hours. At first the urine was always turbid from admixture with fæcal matter, but as time went on it was only the morning urine that was so contaminated. On the day before leaving hospital he was dressed in trousers for the first time in his life; he passed urine at 8.30 A.M. and at 3 P.M., the amount on each occasion being ten ounces, and the bed was dry during sleep from 10.30 P.M. to 5 A.M.

He remained in good health until about twelve months ago, and during this time the exposed mucosa of the bladder gradually contracted to the size of a five-shilling piece. He was able to attend

school, and was always able to retain his urine for the necessary number of hours during the day; at night during sleep, however, he often passed urine and sometimes fæces. During the second year after the operation his general health began to suffer; he developed an unnatural thirst and polyuria, the latter at first intermittent, recurring every few weeks, but later constant. Two months before he died he developed irregular pyrexia and general dropsy, and died with what Dr. Gatenby regarded as uræmic convulsions on the 18th June 1907, two years and three months from the date of the operation.

It must be confessed that while the immediate results of the transplantation of the ureters in this case were extremely satisfactory, the inevitable ascending septic infection from the rectum supervened. While this has been delayed in some of the reported cases for several years after the transplantation, the final result is only the more disappointing, and would appear to warrant the conclusion that this method of treating extroversion of the bladder should be abandoned.

EXTROVERSION OF THE BLADDER—LATERAL ANASTOMOSIS BETWEEN ILIAC COLON AND LOWER PART OF PELVIC COLON—IMPLANTATION OF URETERS INTO EXCLUDED LOOP OF COLON.

By JOHN W. DOWDEN,
Assistant-Surgeon, Royal Infirmary.

THE patient on whom this operation was performed was a girl aged $1\frac{3}{12}$ years. The object of the operation was to implant the ureters into a portion of the intestine, isolated, as far as possible, from the constant passage of fæcal matter, and consequently lessening the danger of pyelitis. In order to obtain this the following operation was performed in the Royal Infirmary, Edinburgh, at the end of August of last year. Probes were passed up the ureters, and the rosette of bladder, which included their orifices, was isolated and dissected up. The abdominal cavity was opened above the bladder by a median incision, and a good loop of pelvic colon was fortunately found. Lateral anastomosis was carried out between the iliac colon and the lower part of the pelvic colon, the opening being about two inches in length. In the excluded loop of colon and at its convexity an opening was made, half an inch in length, in the long axis of the gut, and the isolated rosette of bladder, with the orifices of the two ureters, was sutured to all three coats of the intestine by means of iodised catgut. Lembert's sutures of iodised catgut were now employed to gather up the peritoneal covered surface of the colon round the implanted ureters, in order to lessen the possibility of leakage. The remains of the bladder mucous

membrane were excised and the wound sutured. Shock was marked, but not very severe, and the wound healed by first intention.

The child has remained fairly well since the operation, but rises of temperature from time to time point to the probability that the object of the operation has not been obtained—the avoidance of renal sepsis. At the present, nearly three months after operation, the child is very well and can retain urine for two hours at times. The mother states that sometimes she thinks the child is feverish.

LETTERS TO THE EDITORS.

The Teaching of Clinical Surgery.

Sirs,—In the December number of this *Journal* you refer in an editorial note to a new arrangement with regard to the teaching of Clinical Surgery in Edinburgh.

There have been, as you say, previous negotiations on the subject, and, as you make no attempt to represent the views of those who have been opposed to the new arrangement, I trust that you will give me the opportunity of doing so.

The question at issue is whether or not it is for the advantage of the Edinburgh School of Medicine that the Ordinary Surgeons of the Infirmary should teach Clinical Surgery in the capacity of Extra-Mural Lecturers or in that of University Lecturers. At first sight the difference may seem to be a trivial one. On closer inspection it will be found to be of great importance. In the opinion of those who, like myself, are opposed to the new arrangement, it offers no advantages which cannot easily be engrafted upon the system which has hitherto held good, while it threatens to destroy certain characteristic and valuable features of the Edinburgh Medical School.

For the new arrangement, the advantages claimed are that it widens the field of the examination and thus also indirectly spreads the students more evenly throughout the surgical wards of the Royal Infirmary. This may be granted, but so far as that is concerned, many months ago the then Extra-Mural Lecturers in Clinical Surgery jointly offered their services to the University as Clinical Examiners, without any fee. That offer, however, was accompanied by the refusal to become University Lecturers, and the University Court declined it. Recently I have repeated the same offer on my own account, while the two other Ordinary Surgeons have agreed to make trial for a year of the new arrange-

ment to which you allude. Your editorial note seems to indicate that my offer has again been declined. In that case, it is evident that what the University wishes is not so much additional Clinical Surgery Examiners holding wards in the Infirmary, as such Clinical Surgery Examiners who are also University Lecturers.

In order that those who have not looked closely into this question may understand some of its bearings, I must draw their attention to certain of the provisions of the last University Commission, 1889.

One provision establishes the position of the Ordinary Surgeons of the Infirmary as Extra-Mural Lecturers whose courses qualify for graduation. "These courses" (in Clinical Surgery) "may be conducted by the Professor of Clinical Surgery, . . . or by the Ordinary Surgeons of the Royal Infirmary, Edinburgh" (Ordinance 16, VII. 6).

The other provisions are contained in Ordinance 17, which defines the position of University Lecturers. Thus in section 10 we find: "Lecturers shall be remunerated in such manner as the University Court may from time to time determine;" and again in section 12: "They" (Lecturers) "shall be bound to conform to all regulations with respect to their teaching arrangements which may be made from time to time by the Senatus, after consultation with the Board of Studies or the Faculty concerned, and any questions between them and the Professors shall be determined by the Senatus, with appeal to the University Court."

No one can yet say in how many ways the present relative freedom of the Extra-Mural Lecturers would be restricted by the terms of this Ordinance. Those who favour the new arrangement consider that it brings about a "unification" of the School, or, in other words, is a step towards the absorption of the Extra-Mural School by the University. Many gravely doubt the advantage of such a movement.

But in another direction serious harm to the Edinburgh Medical School may result from the new arrangement if it should become established. The advocates of the new movement are also the advocates of the abolition of the Chair of Clinical Surgery—not in the meantime, perhaps, but as soon as there is an opportunity. They say that if Clinical Surgery can be taught by the Ordinary Surgeons of the Infirmary, why continue a Professorial Chair for the purpose? No doubt a similar argument might quite as easily be extended to other departments of the medical curriculum.

Why, for instance, retain a Professorship of Surgery when several lecturers on the same subject can teach the students? But is the argument a good one? When other universities are subdividing their subjects and instituting new teaching charges to attract to themselves the best men in each department, is Edinburgh to throw overboard the post held by Syme, Lister and Annandale in the past, the blue ribbon to win which clinical teachers and workers in surgery may aspire?

Two distinctive features in the Edinburgh Medical School have done good service in the past—a strong Professoriate, and the healthy rivalry of a strong Extra-Mural School. This new arrangement aims a blow at both.

Lastly, the choice by University students of three qualifying Lecturers on Clinical Surgery besides the Professor of that subject, *i.e.* four in all, existed before the new arrangement was entered upon. The new arrangement has made no difference to that choice, although it would not appear to be so from the way in which you have stated the case.—I am, Sirs, yours, &c.

CHARLES W. CATHCART.

GENTLEMEN,—After careful consideration of Mr. Cathcart's letter, which you have placed before me as Vice-Chairman of the Governing Board of the School of Medicine of the Royal Colleges, it seems to me advisable to make some remarks upon it. The criticisms which it is my duty to make must be understood as coming from me in my personal capacity, for there has been no opportunity of discussing the matter with my colleagues, and I alone am responsible for the following observations:—

It cannot be doubted that in the teaching of Clinical Medicine and Clinical Surgery any regulations which will restrict the numbers of the different cliniques to reasonable limits, and thus permit greater opportunities for the study of disease by each individual member, must tend towards thoroughness, and everyone who wishes well to the Medical School of Edinburgh as a whole will welcome any and every attempt to bring about such a desirable arrangement.

As is well known, there have been for many years different methods in the Medical and Surgical Departments of the Royal Infirmary. On the medical side the various cliniques fall into two groups, one of which is under the charge of the Clinical Professors, and the other under that of the Ordinary Physicians. To each group is attached, in accordance with an archaic system—soon, it

is hoped, to come to an end—a gynæcological clinique, which need not be further referred to here. Each Clinical Professor is an Examiner on Clinical Medicine, and usually one or two of the Ordinary Physicians at the same time hold this office. While any physician who has proved himself to be a good teacher is sure of a large following, it is an undoubted fact that the man who holds the position of Examiner is followed during his tenure of that office by a crowd of the weaker vessels, who desire to learn any special fads which he may possess, and sometimes even it is whispered to attempt to impress their aspiring lineaments on the palimpsest of his brain. It therefore follows that there is often marked inequality in the size of the different cliniques, one teacher having a crowd so numerous as to render thorough teaching impossible, while another, equal in every respect save that he is not an Examiner, may scarcely have clerks enough to do the routine work of the wards.

Turning to the surgical side it is obvious that these influences which make for inequality have not only existed, but have been present in an exaggerated degree. There has been no arrangement amongst the surgeons permitting co-operation in teaching, and each one has fought, like Hal o' the Wynd, for his own hand. This individualism has emphasised the defects of the old system. It has frequently been seen that the surgical teacher who acted for the time as University Examiner had his wards invaded by an unworkable crowd, while his colleagues, who did not then hold the position of Examiner, although probably in every way quite as good teachers, had a sparse following.

This state of matters has long been felt, by all those who have the interests of medical education at heart, to be at once an anachronism and an anomaly. Like many other abuses, however, it is one that appears to die hard. Impressed with the importance of improving the arrangements for the teaching of Clinical Surgery, the University authorities have, during the past two years, been attempting to remedy this state of matters. Last year they offered the Ordinary Surgeons of the Royal Infirmary the position of University Lecturers and University Examiners on reasonable terms; the exact arrangements need not be detailed, seeing that they are of no importance except to those immediately concerned. When the offer was first made, the Ordinary Surgeons declined its acceptance, and the negotiations were, for the time being, broken off. They were recently resumed, and, as announced in last month's *Journal*, were brought to a successful issue. It is unfortunate that one of the Ordinary Surgeons should have seen fit to follow

divisive courses, and to separate himself from his colleagues. By his action in this matter, Mr. Cathcart has prevented the new arrangements from receiving the full and fair trial we had hoped for them. It is a matter for extreme regret that he cannot see his way to fall in line loyally with his colleagues, and to lend his services in what is generally recognised to be a most important step in the attempt to improve the teaching of Clinical Surgery.

The letter which he has addressed to the editors is a most unconvincing document. He is absolutely incorrect in his statement of what he is pleased to call "the question at issue;" he is equally wide of the mark in his assertion that it affords no advantages which cannot easily be engrafted upon the present system; he has no warrant for his remark that the new scheme threatens to destroy certain characteristic and valuable features of the methods heretofore in operation. It is difficult to understand the state of mind of anyone who will advance arguments—if indeed they merit such a term—such as these. The University authorities desire to widen the boundaries of teaching in Clinical Surgery, and in the offer which they placed before the Ordinary Surgeons it was their duty to see that in the recognition of teaching, accompanied for the first time, *ipso facto*, by the duty of examining, certain safeguards should be preserved. It has seemed right to the University authorities to carry out their proposed arrangements, by appointing the Ordinary Surgeons University Lecturers, as well as University Examiners. In so doing the interests of the Extra-Mural School are protected in the most generous fashion, and the accusation that the scheme threatens to destroy certain characteristic and valuable features of the Edinburgh Medical School is a travesty of the facts.

It is unnecessary to follow Mr. Cathcart in his quotation of certain provisions of the Ordinances. The sections which he cites contain the regulations for the teaching of Clinical Surgery, and do not bear directly upon the question at issue. Your correspondent goes on to remark that "no one can say in how many ways the present Extra-Mural Lecturers would be restricted by the new arrangement." This is a truism. It has to be remembered, however, that the University Court may enact any regulations that may seem advisable, and that the surgical teachers must conform to these or lose recognition. It may further be pointed out that the unification of the teaching of Clinical Surgery cannot, by anyone free from prejudice, be regarded as the absorption of the Extra-Mural School by the University. The tendency will indeed be all the other way, for all the surgeons who accept the new scheme will be

members of the Board of Studies, and have an important influence on the whole method of teaching. Mr. Cathcart's last remark, that the supporters of the new movement are also advocates of the abolition of the Chair of Clinical Surgery, cannot be taken seriously. A new Professor of Clinical Surgery has only recently been appointed, and I may be allowed to express my belief that he will complete his term of office with the universal acceptance which has hailed his appointment. If Mr. Cathcart has any doubts as to the view of the Chair of Clinical Surgery in the minds of the reformers, I may point out to him that the chair will be one of the main factors in the arrangements for Clinical Teaching, and that the professor will in all probability be chairman of the Board of Clinical Surgery, which will contain in the immediate future four, not three, teachers, for the Professor of Surgery is also a Clinical Lecturer.

The University authorities are to be congratulated on having taken a liberal and a generous view of the requirements of Clinical Surgery, and it is unfortunate that the scheme should be to some extent hampered by the action of any individual surgeon. Their *bonâ fides* is abundantly proved by the renewal of their proposals immediately after the election of a popular Professor of Clinical Surgery, and it is little short of deplorable that anyone connected with the school should regard their action with so much suspicion.—I have the honour to be, Gentlemen, your obedient servant,

G. A. Gibson.

MEETINGS OF SOCIETIES.

Glasgow Medico-Chirurgical Society.

Friday, 20th November 1908, Dr. Robert Jardine in the chair.

Mr. Cuthbert S. Wallace, F.R.C.S.Eng., B.S.Lond., lectured to the Society on "Some Problems Connected with Morbid Conditions of the Prostate."

The subject was treated under the following subdivisions:—(1) Anatomy; (2) Morbid Histology; (3) Bacteriology; (4) Diagnosis; (5) Treatment.

The internal sphincter is the true sphincter of the bladder, and this is the explanation of the amount of control retained after enucleation of the prostate. In the encapsuled form of prostatic enlargement the enlargement is due to increase of the glandular tissue, and not to enlargement of the acini. There are no signs of inflammation in the

stroma of enlarged prostates, although the epithelium may show signs of a catarrhal proliferation. The third-lobe tumour, so often described, is almost always an extension from a tumour which has developed from one of the lateral lobes, or springs from the toe of a horse-shoe-shaped tumour.

There is no definite relation between the size of the organ and the progress of the pathological change.

The non-encapsuled form is met with in 15 per cent. of cases, and attempt to deal with this variety by enucleation fails, and portions have to be removed piecemeal. Bacterial infection of the prostate is a secondary event, and there is no evidence that enlargement of the prostate is of gonorrhœal origin.

In regard to operative treatment and the differentiation of the encapsuled from the non-encapsuled variety, a long duration of symptoms, and a large, smooth and elastic tumour are in favour of an encapsuled growth. When the patient is just entering on catheter life and the prostate is large, soft, and elastic, operative interference offers the best means of relief. As to choice of operation, by far the larger number of tumours of the prostate can be easily and efficiently removed by the supra-pubic route. The perineal route is indicated where the prostate is small and fibrous.

Carcinoma of the prostate forms 10 per cent. of prostatic tumours. Cases in which, from hardness or nodularity of the organ, carcinoma is probable, should be submitted at once to a complete perineal prostatectomy. Results have not been encouraging.

Friday, 11th December 1908, Dr. Walker Downie in the chair.

Dr. Alex. M'Lennan gave a short account of a case supporting the "saccular theory of hernia." The patient, a boy, came to hospital because of a hydrocele of the tunica vaginalis. At operation it was found that there was a patent processus vaginalis lying behind the tunic and separate from it. An operation as for inguinal hernia (as well as for hydrocele) was performed, and the patient did well. Patient and specimen were shown.

Dr. Arch. Young showed a case of paralysis of lumbrical muscles following injury. Patient received a fracture (from a blow) of the three inner metacarpals. When first seen two months later the interossei corresponding were weak, and the distal phalanges of the two inner digits could not be flexed. There were no sensory symptoms, nor was there any evidence of injury to extensor tendons. Improvement of interossei took place with massage, so that adduction and abduction could be fairly well performed, but no improvement took place with extension of distal phalanges. Dr. Young thought that the effect was due to injury of a small branch of the ulnar—at time of accident. There was no evidence of splint paralysis.

Dr. John M. Cowan read notes on two cases of diaphragmatic palsy. (*a*) Alcoholic neuritis. The patient, a woman aged 48 years, had all the ordinary symptoms of multiple peripheral neuritis of alcoholic origin, and, in addition, incontinence of urine and fæces. The paralysis of the diaphragm was gradual in onset, and did not give rise to appreciable dyspnœa. The cardiac apex was displaced upwards and into the axilla, the liver was also displaced upwards, while the epigastrium was depressed instead of bulging during respiration. The abdominal muscles were paralysed. Recovery was gradual and finally complete. A femoral hernia came down again after recovery, when patient had the power of coughing. (*b*) Landry's paralysis. The patient, a man, had complete motor paralysis, without sensory symptoms and without involvement of the sphincters, coming on steady during fourteen days. There was paresis of several ocular muscles, and diminution of visual acuity in one eye, and also right facial palsy. All reflexes were gone, and there was a partial R. D. With the paralysis of the diaphragm there was no displacement of heart or collapse of lung. He made a rapid and complete recovery.

Dr. George M. Gray (*a*) showed a dissected specimen of congenital absence of the fibula. There were also present talipes equino-valgus, absence of second toe, fusion of astragalus, calcaneum, scaphoid and cuboid bones, and other minor deformities. (*b*) Read notes on a case in which there was found in the dissecting-room a hernia of a loop of small intestine, 5 feet 8 inches in length, through an abnormal appendix epiploica. The appendix, as also one near it, was triangular in shape, with the base next the bowel, and had in it an aperture apparently congenital in nature, through which the bowel had passed.

Edinburgh Medico-Chirurgical Society.

THE second meeting was held on 2nd December, Dr. James Ritchie, President, in the Chair.

Dr. Norman Walker showed a case of pityriasis rubra pilaris in a girl, aged 14. He also showed a cast from a case of molluscum contagiosum associated with favus.

A discussion on oral sepsis was opened by Mr. William Guy, Dental Surgeon to the Royal Infirmary, who said:—

"In discussing the question of oral sepsis it is well at the outset to remember that the mouth during extra-uterine life is never sterile. We have always present the bacteria which constitute the indigenous flora of the mouth, and are not necessarily pathogenic; we find from time to time pyogenic organisms, staphylococcus pyogenes aureus and albus, and streptococcus pyogenes, and those which are concerned in the production of caries and of disease of

the pulp, the various forms of leptothrix and bacillus gangrenæ pulpæ, and, finally, those which obtain fortuitous entry, such as pneumococcus, tubercle bacillus and many other pathogenic organisms.

"The mouth is the ever-open door to the alimentary and respiratory tracts; it affords the most favourable conditions not only for the multiplication of fission-fungi and the production of their specific toxins, but also for the emigration of septic material to other organs and the absorption of toxins.

"While I am prepared to maintain the thesis that a condition of sepsis in the oral cavity is of itself a sufficient deviation from health to claim the attention of physicians, surgeons, specialists and dentists, I feel that the interest of the members of this Society will be most acutely concerned with the condition as a certain, probable, possible, or remotely possible, factor in the causation of disease, or as an intercurrent malign factor in the progress of other diseases.

"I take it that the person deputed to open a discussion such as this is expected to be suggestive rather than illuminative, interrogative rather than informative, and desirous rather of eliciting the wisdom of others than of displaying his own erudition, and this expectation I shall endeavour to fulfil.

"In spite of all that has been said and written (and particularly by Dr. Wm. Hunter), I question if oral sepsis, as the cause of septic gastritis, is as frequently recognised as it should be. Why for countless ages has the tongue alone of the contents of the oral cavity been subjected to a careful scrutiny by the physician? Why in histories of medical cases is the condition of the mouth ignored or alluded to in vague, indefinite terms? Let clinical teachers impress on house physicians and clinical clerks the importance of observing and reporting on the condition of the mouth *qua* sepsis, and this reproach will be removed.

"The physician may with propriety, and indeed often does, enlist the services of the dentist in the treatment of his cases. I wish the physician would always indicate to the dentist what it is that he expects him to do. I think he should explicitly say: 'I wish you, in the first place, to put this patient's mouth in a thoroughly healthy condition, so far as that is possible; to remove or render aseptic all septic teeth, roots, crowns, bridges, dental appliances or defective fillings; to treat or extract decayed or painful teeth; to remove the cause of and treat such conditions as gingivitis, stomatitis, ulcer, periodontitis, alveolar abscess, salivary calculus, pyorrhœa alveolaris, etc., as may be present; and, finally, after all this has been accomplished, to consider the advisability of increasing or restoring the masticatory efficiency of the patient by the insertion of artificial teeth.' Such an instruction from the physician would tend

to the maintenance of a high scientific standard of professional work among dentists, not to mention the satisfaction they would feel in being asked to co-operate with the physician—a satisfaction which is somewhat lacking when the patient presents him- or more frequently *her*- self with the bald statement, 'The doctor says I ought to get in some teeth.'

"On the surgeon I would urge the necessity of attention to the hygiene of the mouth previous to the performance of any operation involving that cavity or any part of the digestive tract. I pause here to invite your views on oral sepsis as one of the principal causes of appendicitis.

"Rhinologists are, I believe, agreed that in suppuration of the antrum of Highmore the route of infection is much more frequently nasal than dental. But I should like them to consider the possibly frequent infection of the nose from the mouth.

"Aurists must have many opportunities of noting infection of the middle ear from the mouth.

"In the treatment of pulmonary tuberculosis the condition of the mouth and teeth deserves careful attention.

"I believe that in the course of all acute diseases, and especially of the exanthemata, the presence or absence of oral sepsis is often the determining factor in the death or recovery of the patient. Major Macpherson, in his report on enteric in the Boer War, says, 'All the bad cases had bad teeth.' I should like to hear of some accurate observations being made in this connection in our fever hospitals, particularly in regard to scarlet fever and its sequelæ. There is now provision made for medical inspection of school children. Dental caries is the most prevalent of all diseases. What is the good of inspection without treatment, and how is that treatment to be paid for?

"In the vast majority of children of school age I believe it is wiser to extract carious milk-teeth than to attempt to fill them—better a clean mouth than a dirty one. I even question whether any tooth that has become septic in a child should be retained. At the Dental Hospital I have for long taught that such teeth should be extracted.

"In cases of septic adenitis I think the physician should advise the removal of any septic teeth, and I further think that the dentist would be well advised to carry out the direction without hesitation or demur.

"The alienist will tell us, I hope, that the hygiene of the mouth is an essential part of the hygiene of the mind. I recall two cases of empyema of the antrum which produced profound depression, bordering on melancholia.

"The use of local anæsthetics for tooth extraction has grown very common of late years, and is responsible for much post-operative sepsis, gangrene and necrosis.

"All must be familiar with cases of neuroses or neuritis due to oral sepsis.

"I will not enumerate all the remote infections and results of toxæmias due to the same cause, but I trust the discussion will educe many important and interesting clinical experiences."

Dr. Gulland said there was a danger of confusion between the effects of sepsis and deficient mastication, especially in digestive disorders. Many cases, thought to be due to oral sepsis, were really due to faulty mastication and insalivation of the food. The risk of septic infection was very much less in persons whose secretion of HCl. was either normal or excessive. This explained the numerous cases of septic mouths not accompanied by symptoms of indigestion.

In persons with poor HCl. secretion, fermentative and inflammatory changes were easily set up.

He had the teeth of phthisis patients carefully attended to, but more to ensure good mastication than from the fear of sepsis. Mouth breathers were specially liable to oral sepsis.

There was no connection between oral sepsis and pernicious anæmia. He had seen the condition in patients who had had no teeth for years, and there was no greater incidence of pernicious anæmia in persons with bad than with good teeth. Of course the greatest incidence of pernicious anæmia was at middle age, when the teeth were generally decaying. He had never seen glossitis in pernicious anæmia till the blood changes were marked.

Dr. G. M. Robertson said that all bacterial changes were of importance in mental disease, as the resistance to infection was diminished.

The opsonic index was lower than in the healthy person. The insane were specially susceptible to all toxins, and perhaps the proximity of the 5th nerve to the cranial cavity might make toxins in connection with that nerve specially important. Of all mental conditions, cases of dementia precox were specially liable to suffer from oral sepsis.

Mr. Miles referred to the importance of attention to the teeth in syphilis. The best method in cleansing the mouth in syphilis was the use of peroxide of hydrogen or Condy's fluid. There was a marked difference between men and women in tolerating mercury in the treatment of secondary syphilis as far as the mouth was concerned. Women were much more easily affected.

Mr. Scot Skirving, C.M.G., thought that the bad effects of local anæsthesia, in the mouth, which frequently occurred, might in part be due to imperfect antiseptic technique.

Dr. James Carmichael referred to the glandular affections of childhood, which were due in most cases to a focus of infection in the mouth or naso-pharynx.

Dr. Fowler said that considering the commonness of bad teeth in

children, it was surprising that resulting disease was not more definite. One condition, however, stood in very definite relationship—that was a persistent cough due to chronic tonsillitis or pharyngitis, which only disappeared when bad teeth had been extracted. Artificial cleaning of the mouth in babies often did more harm than good.

Dr. Norman Walker asked whether a medical man who had to deal with a case of syphilis, whose teeth would require treatment before mercury could be given, was justified in communicating his diagnosis to the patient's dentist.

Dr. Byrom Bramwell said several groups of conditions arose from bad teeth; there were the glandular enlargements, reflex conditions and the results of toxins. He thought that many cases ascribed to toxins might really be due to imperfect mastication or to pain. More information about the recovery after tooth extraction of cases thought to be due to sepsis was required. He agreed with Dr. Gulland's remarks about pernicious anæmia, and thought the anæmia and the glossitis were due to the same cause.

Mr. Dowden referred to the frequency of glandular enlargement due to infected tonsils altogether apart from bad teeth.

Dr. Guy in reply stated that when a syphilitic patient required dental treatment, the dentist should be called in consultation, and that no ethical difficulty would then arise. Many cases of pernicious anæmia had been sent to him for a report on the condition of the teeth. Only rarely had he found any sepsis.

Dr. Byrom Bramwell gave a lantern demonstration of a series of cases of unusual interest.

These included a case of chronic lymphatic leukæmia developing in a man at the age of 77; a case of hæmorrhage in the pons and medulla in which death did not occur till a month later, and unconsciousness only developed just before death; a case of aneurism of the basilar artery, with rupture 90 hours before death. There was evidence of a previous rupture 7 weeks before death.

A clinical meeting was held in the Royal Infirmary on 16th December 1908, Dr. James Ritchie, President, in the chair.

Mr. Cotterill showed (1) a patient after pylorectomy for medullary carcinoma. An interesting feature was that before operation the amount of HCl. secretion was quite up to the normal. (2) A woman after partial gastrectomy for adeno-carcinoma of the stomach. The stomach had been dislocated downwards, so that, although there was no gastric enlargement, the tumour could be felt in the left iliac fossa. (3) A case of colectomy and removal of a portion of the anterior abdominal wall for scirrhus of the sigmoid flexure. (4) A man who had sustained a severe crush of the abdomen, and 4 hours later began to suffer from acute abdominal pain. Symptoms of peritonitis

supervened, and patient was admitted to hospital 38 hours after the accident. Laparotomy revealed strangulation by an unusually thick Meckel's diverticulum. Three feet of gangrenous bowel were removed. (5) A patient after nephrectomy for a hypernephroma of the kidney. The tumour was limited to the lower pole. The affected kidney only secreted half as much urine as the other, and the urine on the affected side showed slight staining with indigo-carmine.

Dr. Lovell Gulland showed a patient who had been sent to hospital on account of gastric symptoms thought to be associated with a small hernia. There was some pigmentation of the skin, emaciation, low blood-pressure and rapid pulse. Calmette's reaction was positive. The condition was Addison's disease. Dr. Gulland also showed a case of exophthalmic goitre, in which only the isthmus of the thyroid seemed to be affected.

Dr. Gulland showed for Sir Thomas Fraser a case of beri-beri.

Professor Caird showed (1) two cases after operation for internal strangulation of the small intestine. (2) An interesting case of gall-stone, in which some of the stones had ulcerated through the ducts.

Mr. C. W. Cathcart showed (1) a man suffering from extensive hepatic adhesions, with symptoms like those of gall-stones. (2) Two patients (sisters) showing hereditary malformations of hands and feet.

Mr. Scot Skirving showed (1) a patient with marked paralytic talipes equino-varus, treated by implantation of artificial (silk) ligaments; and (2) a patient after operation for large inguinal hernia treated by filigree wire implantation.

Dr. W. G. Sym showed a patient after extraction of the lens for the cure of high myopia. The operation was one never to be undertaken lightly, but in this case had been completely successful in both eyes.

Mr. Alexis Thomson showed a man who had swallowed a number of metallic and other objects, and had passed a great many of them, but required an operation for removal of a mass which had become impacted in the second part of the duodenum.

Mr. Alexander Miles showed (1) three patients suffering from gonorrheal ophthalmia under treatment by vaccines and sera. (2) Other cases illustrative of venereal disease who were improving under treatment by soamin.

Dr. Wm. Russell showed a remarkable case of elephantiasis.

Edinburgh Obstetrical Society.

THE second meeting of the session was held at 5 St. Andrew Square on Wednesday, 9th December 1908. Professor Stephenson, President, was in the chair.

Dr. Watson exhibited for Dr. William Fordyce:—(*a*) Specimens of ectopic gestation. (*b*) Subperitoneal fibroid of very rapid growth,

weighing 17 lbs. and showing myxomatous degeneration. There was a remarkable absence of symptoms, the enlargement alone being complained of, and no menorrhagia, and no bruit or souffle being present. (*c*) Fibroid which caused urgent symptoms owing to twisting of its pedicle. (*d*) Uterus from patient, æt. 60, showing very early cancer.

The Secretary read a communication from Dr. T. M. Callender on "Thyroid Extract as a Preventive to Dystocia from Large Child." In it the author recorded two cases in which the administration of thyroid extract during pregnancy had rendered easy the birth of living infants, whereas previous pregnancies had ended in difficult labours and dead infants.

Dr. Callender considers the success of the use of the thyroid in such cases to be due to a reduction in the size of the child. He therefore advocates the treatment as specially applicable to mothers having a fairly normal pelvis but with history of having habitually large children. He found thyroid always to be well borne during pregnancy.

The President said he had not always found the effect of thyroid to be beneficial to women during pregnancy, and he thought it might render labour easier in other ways than by the effect on the fœtus. Dr. Nicholson said he had frequently given thyroid to women during pregnancy, at all stages and often in large doses, without harmful effects. He had formed the general impression that in these cases labour was, as a rule, easy and rapid. He referred to Lange's valuable researches on the relation of thyroid to pregnancy, in which no atrophying effects on the fœtus were mentioned; and also quoted Dr. Sloan, Glasgow, as having found great benefit from thyroid given in the later months of pregnancy in cases of obesity with slight pelvic contraction.

Dr. J. W. Ballantyne referred to Prochownik's paper on modifying labours in cases of narrow pelvis by means of diet, in which the effect in reducing the cellular tissue in the pelvis was emphasised much more than the effect on the child, and suggested that the benefit derived in cases like Dr. Callender's might be due largely to the same effect.

Dr. J. W. Ballantyne read a paper on "Pre-Maternity Hospital Practice: a Series of Thirty Cases of Morbid Pregnancy Treated in the Royal Maternity Hospital, Edinburgh, during the Autumn Quarter of 1908."

A brief review of the autumn quarter's work at the Maternity Hospital showed a total of 443 cases treated in connection with the institution. Of these, 144 were indoor, 196 outdoor, and 193 at Leith branch. The actual number of deliveries dealt with was 432, which gave an average of 4·69 births per day. Three maternal deaths occurred during the quarter, or 0·67 per cent. One of these occurred in the pre-maternity department—a grave case of chorea gravidarum at the

second month of pregnancy. The second death was a case of incomplete abortion, in which septic infection was present some time before admission. The other death occurred at the Leith branch, and was the first maternal death recorded out of over 600 cases treated since that branch was opened fifteen or sixteen months ago. In it death was ascribed to pulmonary embolism following the expulsion of a five months' abortion sac entire the previous day.

A detailed account was then given of the cases treated in the Hamilton Ward, whose beds are utilised for the treatment of cases of morbid pregnancy. During the quarter these numbered 30—quite the largest number treated in any quarter hitherto. The average age of the patients was 30, and the time spent in hospital before labour came on, or the patient returned to her home, varied from 2 to 114 days. All the mothers did well except one. Of the fœtuses, 10 were dead-born out of the 25 expelled, twins having occurred twice; but only 1 out of the 10 had reached the ninth month, and of the rest 5 were under seven months. The conditions dealt with in the individual cases were: Eclampsia cases, 5; albuminuria, 3; accidental hæmorrhage, 4; placenta prævia, 3; abortions, 4 cases of threatened abortion, in 3 of which the pregnancy continued and 1 ended in complete abortion; retroversion of the gravid uterus, 2; habitual fœtal death, 1; phlebitis in pregnancy, 2; heart disease in pregnancy, 1; gingivitis, 1; severe chorea gravidarum, 1; gonorrhœal arthritis in pregnancy, 1; contracted pelvis and vaginal cicatrisation, 1; twins and hydramnios of both sacs, 1.

From a review of these cases Dr. Ballantyne claims that they prove completely that there exists a rapidly-increasing demand among medical men for some place—hospital or nursing home—in which morbid pregnancies can be kept under observation and suitably treated. There were also indications that the patients themselves were beginning to share in this feeling, some having come to the hospital of their own initiative for treatment during pregnancy.

Another point emphasised was that many of the most serious cases in obstetric practice occur in the first half of pregnancy, a fact which, if properly recognised, would considerably alter the mortality returns in connection with parturient or puerperal deaths.

The difficulty of giving full justice to such pre-maternity cases with the ordinary staff and under the ordinary conditions of a maternity hospital was referred to.

Dr. Ballantyne concludes that these and other difficulties can only be overcome, and the full value of pre-maternity hospital treatment revealed, by the adoption of the plan, originally proposed by him, of a pre-maternity hospital in a separate but connected building.

Forfarshire Medical Association.

A MEETING of the Society was held in Dundee on Thursday, 10th December, at 8.30 P.M. Dr. Pirie, Vice-President, occupied the chair.

Dr. Don showed a case of bismuth poisoning following the injection of bismuth into a tuberculous cavity in the region of the knee-joint in a girl aged 21. She had in all 3 ozs. of a 33 per cent. bismuth mixture injected. Symptoms of poisoning appeared about the end of three weeks, and were chiefly confined to foul breath, with ulceration of tongue and mouth; bluish-grey line along the gums, which became very soft and spongy. There was great general weakness. There had been considerable improvement, as indicated by her present condition, which showed a bluish-grey line along the gums and on tongue, and the teeth which had been loosened were now firmer.

Dr. Don then read notes on the use of bismuth injections in the diagnosis and treatment of tubercular and other cavities, which will appear in next month's *Journal*.

Dr. Colman then read notes on acute rheumatism in childhood, which appears on page 28.

Dr. Pirie gave an account of the use of bismuth as an aid to X-ray diagnosis in diseases of the stomach and bowels.

He mentioned that ten years ago bismuth had been used by physiologists to study the movements of food in the stomach and intestines of cats. It was only very lately that it had been used to any extent in man. He spoke of the large amount of work Hertz had done in that line, and Gray of Aberdeen, and Morton of Guy's. He described and exhibited by numerous X-ray photos the passage of a bismuth meal (2 ozs. of carbonate of bismuth in a plate of porridge) from the stomach to the lower parts of the intestine. He said that, as a rule, six hours after a meal bismuth could be seen in the stomach and also in the cæcum. None could be detected in the small intestine, probably owing to the small quantity that was distributed over the long length of bowel not being sufficient to cast a shadow. The passage was much slower in the large bowel and frequently delayed at the flexures in the colon. One was thus enabled to demonstrate any pathological change in the bowel—displacement, narrowing, dilatation, etc. He mentioned in detail twelve cases he had used it in, and in these it had proved of value in clearing up many points which had been in doubt, especially in cases of obstinate constipation. He found it was quite as good if not better to give the bismuth in 2-dram doses frequently repeated. This administration of the bismuth, the carbonate being used, does not cause any discomfort, and is quite safe, and is of great value in that it shows the position of each part of the colon, and should be of great value to the surgeon in indicating the site of a stricture and the exact position of the appendix, whether above or below the brim of the

pelvis. The state of the stomach can also be studied—its size, position, and muscular activity of its walls—and the presence of a stricture at either opening demonstrated.

Professor Stalker said he considered that this method held out great hopes for the physicians, as it should help to clear up many vague abdominal conditions, and would be of special value in the early diagnosis of cancer in the stomach or bowel, and thus lead to an early operation, when some hope for a permanent recovery could be given to the patient.

Dr. Whyte was satisfied of the great value of the method in conditions in the lower alimentary tract, but doubted if it would prove so valuable in stomach conditions.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. S. FOWLER, M.D., F.R.C.P.,
Physician to the Royal Hospital for Sick Children, Edinburgh.

The Clinical Diagnosis of the Varieties of Cardiac Arrhythmia without the Use of Special Apparatus.

Our present knowledge of the irregular action of the heart practically dates from the introduction of the graphic method of analysing cardiac movements. Nowadays a great deal more is known as to the nature and meaning of the different forms of irregular pulse than was the case five or ten years ago, yet it is to be feared that there exists a general impression to the effect that, because venous, radial and cardiac tracings were required to make these discoveries, the recognition of the different types of cardiac irregularity is impossible without their aid. This, however, is not the case, for as Hering shows (*Münch. Med. Wochenschr.*, 24th November 1908), a correct diagnosis can almost always be arrived at without the aid of any instrument whatever. In this review, therefore, stress will be laid on the clinical aspects of cardiac arrhythmia, with as little reference to graphic methods of record as possible.

The classification generally adopted is the following (Gerhardt, *Ergebnisse d. inner. Med. u. Kinderheilk.*, Bd. ii., 1908):—(1) Respiratory arrhythmia; (2) extra systole; (3) continued irregularity; (4) faults in conduction; (5) pulsus alternans. Mackenzie (*Dis. of the Heart*, London, 1908) gives practically the same arrangement:—(1) Sinus irregularity; (2) extra systole; (3) nodal rhythm; (4) affection of the

conducting function; (5) affections of contractility (pulsus alternans). Before discussing these individually some reference may be made to the symptoms of which patients complain.

When the patient complains that now and again he suffers from an unpleasant beat or jog in the cardiac region, this points to the occurrence of an extra systole. No other form of irregularity gives rise to this sensation. Of other subjective phenomena accompanying arrhythmia there may be mentioned the feeling of distress and faintness (or actual fainting) accompanying the temporary stoppage of the ventricular beat in cases of delayed conductivity. Mackenzie associates pulsus alternans with angina, but according to Hering pulsus alternans occurs without, as well as along with, cardiac pain. When continued irregularity of the pulse sets in suddenly the patient complains of oppression and of feeling ill; when it sets in gradually there may be no subjective symptoms.

1. *Respiratory Arrhythmia.*—This group is distinguished from the others (except that due to faulty conduction) by being due entirely to differences in the intervals between the beats; the size of the individual beats is not altered. In animals respiratory irregularity occurs as a normal condition, the pulse being more frequent with inspiration, less frequent with expiration. These variations disappear under atropine or on section of the vagus; they are, therefore, due to vagus action. In the healthy adult such variations in rate do not occur, but respiratory arrhythmia is often met with in children, in neurasthenic persons, anæmia, convalescence from acute disease, and in cerebral lesions. It is often associated with slowing of the pulse. This is the form of irregularity which occurs in tuberculous meningitis. It has nothing to do with cardiac disease. In most cases (*e.g.* neurasthenia and convalescence) respiratory arrhythmia is simply due to an abnormal exaggeration of the respiratory reflex. In meningitis and cerebral diseases generally, it probably arises in the same way, though, owing to the inequality of the respirations, the irregularity appears greater.

Respiratory arrhythmia is easily diagnosed; the only possible difficulty is in the case of children, where the irregularity may be so constant as to suggest continuous irregularity (nodal rhythm). It may be distinguished by the use of digitalis and atropine. Under the former drug respiratory irregularity becomes more evident; under atropine it disappears. Continued irregularity, on the other hand, is diminished by digitalis and is not affected by atropine. The chief point in the recognition of respiratory irregularity is to decide whether it is due to a cerebral lesion or to neurasthenia.

2. *Extra Systole.*—This is the most common form of irregularity. The peculiarities of the extra systole depend on two main facts:—(1) The normal stimulus to contraction arises in the auricles near the

mouths of the veins, and (2) each segment of the heart, immediately after it has contracted, enters upon a "refractory phase," during which it cannot respond to a fresh stimulus. The phenomena of extra systole were fully discussed in a former review (W. T. Ritchie, *Scott. Med. and Surg. Jour.*, September 1906), hence a short description of the condition will suffice. *Ventricular Extra Systole.*—By this is meant one in which the extra stimulus arises in the ventricles. The contraction which it evokes is followed as usual by a refractory phase. This renders the ventricle incapable of responding to the ensuing normal auricular stimulus, hence the ventricle remains inert until the next auricular stimulus, on receipt of which it contracts forcibly. That is to say, the extra systole is followed by an extra long pause, but the beat after the extra systole falls into the normal rhythm—the pause is "compensatory." *Auricular Extra Systole.*—When the extra stimulus arises in the auricles it is, of course, followed by a contraction of the ventricles, and as the auricular systole is followed by a refractory phase of the auricles, the ensuing auricular contraction cannot fall at the normal time, as these chambers have not yet recovered their contractility. The pause, therefore, is not compensatory. *Interpolated Extra Systole.*—When the action of the heart is so infrequent that the refractory phase following an extra systole is over before the ensuing normal beat is due, no pause occurs. Other varieties of extra systole exist—the *Retrograde Extra Systole*, an extension of a ventricular extra systole to the auricles; and the *Auriculo-ventricular Extra Systole*, in which the auricles and ventricles contract simultaneously, or almost simultaneously. These subdivisions, however, can only be made with the aid of tracings.

Theoretically, extra systoles may arise either (*a*) from an exaggeration of the normal automatism of the heart, or (*b*) from increased sensibility of the heart, whereby conditions which ordinarily would leave it undisturbed act as stimuli. In favour of the first theory are the occurrence of extra systoles in digitalis poisoning and when the arterial pressure is high. The probability, however, is that the second explanation is the correct one. Patients who suffer from extra systole nearly always show the abnormality at a constant point in the diastolic period. Further, extra systoles most commonly occur just as the blood is beginning to flow from the auricles into the ventricles—a period at which an excitable heart would be especially liable to contract. The frequency with which extra systoles occur at regular intervals (after every 2nd, 3rd and 4th beat, &c.) favours the same view. Extra systoles occur in all sorts of nervous conditions. Nerve influence, however, brings them about only indirectly, either by raising the blood-pressure (vaso-motor action) or by increasing the excitability of the heart. It is impossible to produce extra systoles experimentally by direct irritation of the cardiac nerves.

Extra Systoles are not difficult to recognise. Where they are accompanied by the sensation of a thud in the præcordial region, and simultaneously therewith felt at the wrist as intermissions or premature beats, the diagnosis is complete. Since, however, an extra systole is not always associated with any subjective sensation, it is necessary, when an intermission is noticed, to auscultate the heart or palpate the apex beat in order to detect the premature ventricular systole. On auscultation most extra systoles are heard as single, sharp, drum-like sounds; the contrast between the loud sound and the subjective thump on the one hand, and the feeble, almost imperceptible radial pulse, on the other, is remarkable. In the minority of cases the sound heard on auscultation is abnormally feeble. It has been suggested in explanation of the loud tone of the abortive beats, that the contraction is less peristaltic and more spasmodic than normal. Where an occasional premature beat is felt in an otherwise regular pulse extra systole may be diagnosed. When the pulse shows an irregular sequence of premature beats and intermissions it may be inferred that, since the premature beats are extra systolic, the dropped beats are due to the same cause. In cases of ventricular and auriculo-ventricular extra systole, a synchronous wave can be made out on the jugular vein. This is the only case in which we obtain guidance, except by tracings, to the origin of an extra systole. The sole difficulty in the diagnosis of extra systoles is to distinguish them from dropped beats due to failure of the ventricles to respond to an auricular stimulus. This difficulty arises only when the extra systole is so premature or so feeble as to give rise to neither radial pulsation nor an audible sound. Even then, however, examination over a lengthened period will certainly lead to the discovery of less premature extra systoles which give rise to auscultatory signs. The bigeminal pulse is usually due to extra systoles; it may, however, be simulated by the failure of the ventricles to respond to every third stimulus. Here the diagnosis is made by auscultation; the second beat, if due to extra systole, has a drum-like character, and the second sound is feeble or absent. If a patient complains of symptoms suggestive of extra systole, but has at the time of examination a perfectly regular pulse, extra systoles can usually be produced by making him walk quickly up and down the room.

Clinical Significance of Extra Systoles.—The mere presence of extra systoles is of little diagnostic or prognostic importance. They occur (1) in nervous persons, (2) at the beginning of an attack of acute cardiac disease, and (3) in chronic heart disease. Their significance depends on concomitant circumstances. In fevers, and in heart disease in which the pulse has previously been regular, they suggest implication of the myocardium. Mackenzie states that extra systoles are rare in acute infections. Extra systoles following excess in tobacco or tea are functional. When associated with subjective sensations they are of nervous origin.

Among doubtful forms of extra systole Gerhardt enumerates *pulsus bigeminus*, *hemi-systole*, and *tachycardia*. The relation between pulsus bigeminus from extra systole and that due to failure of the ventricle to contract has been referred to. Hering and Mackenzie deny that true hemi-systole (*i.e.* the alternate contraction of the right and left ventricles) occurs except in a dying heart, and assert that most cases of supposed hemi-systole are simply extra systoles. Kraus and Nicolai, however (*Berl. kl. Wochenschr.*, 1907, Nos. 25 and 26), from a study of electro-cardiograms, think that in some cases of extra systole the ventricles act independently. Mackenzie refers paroxysmal tachycardia to the next group of irregularities (nodal rhythm); Wenckebach also doubts whether it has to do with extra systole. Others look on it as due to increased excitability of the auriculo-ventricular bundle (Schmoll).

3. *Arrhythmia Perpetua—Continued Irregularity—Nodal Rhythm.*—This is distinguished from the preceding by the fact that the original rhythm of the heart is quite unrecognisable, and that the force, size, and sequence of the beats are irregular. As the case improves under rest, normal beats appear, and the irregular ones become less manifest. It might be thought that in this form of arrhythmia we have numerous extra systoles succeeding each other so frequently as to obscure the compensatory pauses. The two forms of arrhythmia, however, differ fundamentally :—(1) in most cases of continued irregularity, even when the number of irregular abortive beats has been diminished by digitalis there is still left behind irregularity of the normal, powerful beats; (2) the venous pulse shows a ventricular wave and no presystolic (auricular) wave, proving that the normal action of the auricles is either abolished or diminished. According to Wenckebach and Mackenzie, continued irregularity is due to the stimuli to contraction arising at the auriculo-ventricular junction or node, instead of at the openings of the great veins. An analogous irregularity can be produced experimentally in animals. Wenckebach regards the lesion which produces arrhythmia perpetua as being situated in a bundle connecting the mouths of the veins with the right auricle. It is a characteristic of this form of irregularity that it is permanent when once it is established. It may occur in any form of heart disease, and seems especially associated with dilatation of the auricles. It is an arrhythmia which is of purely cardiac origin, and does not depend on nerve influence. If it develops suddenly in a heart which was previously active normally, it proves that some new factor has become operative—a myocardial lesion. Mackenzie regards the sudden onset of nodal rhythm as most serious, whether in cardiac disease or in acute infection such as pneumonia.

The clinical diagnosis is not difficult, if the above features be remembered. It is diminished, but not abolished by digitalis; atropine has no effect.

4. *Irregularity Due to Affections of Conductivity.*—This is caused by lesions of His's bundle, by digitalis, and by irritation of the vagus. The two latter diminish, never abolish, conductivity. Heart block due to organic lesion was discussed in this column of the *Ed. Med. Jour.*, January 1907. Diminished conductivity, shown by the dropping out of every 7th, 6th, 5th . . . beat, &c., may occur during convalescence from typhoid, influenza and rheumatism ; it is also liable to follow the administration of digitalis.

5. *Failure of Contractility.*—The characteristic irregularity found in such cases is an alternation of feeble and powerful beats—pulsus alternans. Riegel, who first described it, confused it with pulsus bigeminus. It is, however, easily distinguished by auscultation. Pulsus alternans is rendered more apparent by causes which increase the rate of the heart ; digitalis, which slows the heart, causes it to disappear. The explanation of pulsus alternans is simple. Owing to failing contractility the heart does not respond properly to the stimulus following a strong beat, consequently the next beat is feeble. Owing to the short duration of the feeble beat the succeeding period of rest is longer, and the ensuing stimulus is answered by a forcible contraction, and so on.

The modern classification of irregular action conduces greatly to ease in diagnosis, because we now recognise comparatively few types, and can, as a rule, at once reduce the possibilities to two or, at most, three. Even when combinations of the main types occur the diagnosis is not difficult, because it is only the extra systole which is liable to be associated with others. Such combinations as continued irregularity and delayed conduction, or continued irregularity and pulsus alternans, or pulsus alternans and delayed conduction do not occur. The important point in practice is to distinguish between the mild forms of irregularity—respiratory arrhythmia and extra systole—and the rest.

SURGERY.

By ALEXANDER MILES, F.R.C.S.,
Surgeon to Leith Hospital ; Assistant-Surgeon, Royal Infirmary.

The X-Rays in Treatment.

The effects produced by X-rays in the treatment of disease provided an interesting discussion at the annual meeting of the American Therapeutical Society (*New York Medical Record*, 7th November 1908). They may be summed up as follows :—(1) Atrophy of the appendages of the skin, either permanently, as in hypertrichosis, or temporarily, as in sycosis, favus, &c. (2) Destruction of organisms in living tissue, as in lupus vulgaris. In cases of tuberculous adenitis, with broken-

down glands and discharging sinuses, the bactericidal action is apparently combined with a blockage of the lymphatics and their transformation into fibrous cords. (3) Alterations in metabolism, accounting for some of the results in certain skin diseases (chronic indurated eczema, lichen planus and psoriasis) and in leucocythæmia. In the latter Stengel and Pancoast advocate the application of the rays to the bone-marrow, and only secondarily to the splenic and glandular enlargements. In exophthalmic goitre improvement in the body weight and strength has occurred in 75 per cent. of cases after six to twelve applications, but the permanency of such improvement is still unsettled. The thyroid enlargement and exophthalmos are more refractory (Pfahler, *New York Medical Journal*, 24th October). (4) Selective action on cellular tissues and destruction of intensely diseased cells long before healthy ones; hence the application of the rays in superficial carcinoma and sarcoma, tuberculosis of the skin, leprosy, &c. Their sphere of usefulness in malignant disease is still undecided, but further investigations are warranted by the "absence of any indications of a curative serum or prophylactic vaccine, and the uselessness of alleged empirical remedies" (*3rd Report, Cancer Research Fund*, London, 1908). There is at present little justification for their pre-operative application. After operation, particularly for mammary cancer, Williams (*New York Medical Record*, 7th November) has obtained favourable results in the prevention and cure of recurrences, and in recurrent or inoperable sarcoma Pfahler claims fifteen cures out of twenty-two cases. Others have failed to notice any good effect, except the healing of superficial sinuses and the decrease of pain, rendering opiates unnecessary. A case of leprosy, treated for over eighteen months by X-rays, has been reported by Heiser (*New York Medical Record*, 31st October). For two months afterwards there was no clinical or bacteriological evidence of the disease. (5) The inhibition of degenerative cell development has been observed in keloid; and, finally (6), the decrease of pain already mentioned may occur apart from malignant disease, *e.g.* in certain neuralgias, and the itching of prurigo, eczema, &c., may be reduced.

In a paper on "X-Ray Dermatitis and its Prevention" (*British Medical Journal*, 12th or 26th September) Hall-Edwards gives some valuable hints regarding self-protection, which no operator can afford to neglect.

Volkmann's Ischæmic Paralysis.

Within the last few years this disabling condition has attracted a considerable amount of attention. Alfred S. Taylor (*Ann. of Surg.*, Philadelphia, September 1908) has collected fifty-nine recorded cases, in all but two of which the forearm was involved. In the other two cases the flexors of the leg and foot were implicated. From a study of these cases he concludes that the condition is essentially a myositis

resulting from prolonged absence of oxygenated blood from the muscle. The muscle substance is replaced by fibrous tissue, and there ensues a contracture of the new-formed tissue. The nerves are frequently involved, either primarily from the ischæmia and pressure, or secondarily from compression by the cicatricial mass. The great majority of the cases occur in children from three to twelve years of age, and the condition almost always follows upon the application to the forearm of a tight apparatus. The early symptoms are pain and swelling of the limb, with rigid contracture and paralysis of the muscles, causing the hand to assume the characteristic "claw-like" attitude. The simultaneous appearance of contracture with paralysis differentiates this condition from palsies due purely to nerve lesions. The condition may ensue on tight compression for only six hours.

To prevent this complication all splints or bandages for injuries about the elbow-joint in children should be applied with great care, and allowance should be made for traumatic reactionary swelling. The dressing should be frequently inspected during the first few days to insure that it is not exerting undue pressure. If there is any reason to suspect that ischæmic paralysis has occurred, all dressings must be removed, and every effort made by massage, electricity, douching and passive movements to promote the nutrition of the muscles and maintain their function. The treatment of the fracture must, for the time being, be considered a secondary matter.

When the condition is established, operative treatment is usually called for. The tendons of the shortened muscles may be lengthened sufficiently to permit of simultaneous extension of the wrist and fingers. Taylor considers resection of a sufficient length of both bones of the forearm, to admit of full extension of the wrist and fingers, a better procedure. He records a case in which he performed this operation, inserting aluminium tubes into the tube of periosteum in such a way that they received the ends of the bones and kept them steady. The median and ulnar nerves, which were found to be compressed, were freed and wrapped in Cargil membrane. The result was very satisfactory. The after-treatment calls for much patience and perseverance, and is often very prolonged. On the whole, the prognosis is unfavourable, only a small proportion of cases being perfectly cured.

Erdmann (*ibid.*) reports a case in which the median and interosseous nerve were found on operation to be compressed to about half their normal size by infiltration in the muscle and fascia. Marked improvement followed the freeing of the nerves.

R. Jones (*Amer. Jour. of Orthopædics and Surgery*, 1908, p. 4) reports twenty-four cases, none of the patients being over fourteen years of age. In nineteen of the cases the condition had followed on fracture. He describes a simple method of treatment. While the wrist is flexed, the contracted fingers are extended at the inter-phalangeal joints, and each

finger splinted separately. A few weeks later, the wrist being still flexed, all the fingers are extended at the metacarpo-phalangeal joints and fixed in splints. At a third sitting the hand is extended at the wrist, and at a fourth, fixed in a position of hyper-extension. There is no tendency to relapse, the circulation returns to the normal, and if the damage to the nerves is not too great the normal shape is recovered. He does not approve of division and lengthening of the tendons. Martin employs a splint attached to the finger by means of rubber bands, so that constant and moderate extension can be exerted, and Reginald H. Sayre uses an orthopædic splint by means of which the degree of extension can be regulated and gradually increased. None of those measures, however, as Taylor points out, give relief to damaged nerves.

The Application of Weight-Extension Directly Through the Bones.

To get over the difficulty of controlling the fragments in fractures of the thigh by weight-extension applied in the usual way with adhesive plaster, Steinmann, of Berlin, recommends a new method. He drives two slim nickelled steel nails, 6 to 8 cms. long, obliquely downwards into the bone, and to the projecting heads of the nails he attaches a cord by which the necessary weights are suspended over a pulley.

Wilms, of Basle, has tried this method, using, however, nails shaped like chisels, in the hope that they would be less likely to become loose. He finds, however, that the nail will become loose whatever its shape, and so he has adopted the following plan:—He uses a steel rod, 20 cms. long and 4 mms. thick, provided with a screw at both ends. One of the ends is flattened on both sides and pointed, while the other is made to fit into an electric trephining apparatus. In a case of comminuted fracture of the femur, under lumbar anæsthesia, he passed the steel pin through the femur three fingers' breadth above the joint. The motor drove the rod through the bone in a few seconds without the least vibration or displacement. A strip of gauze was rolled round the projecting ends, two circular discs of tin were passed over the ends of the rods and screwed firmly to these. The leg was placed in a splint, the ends of the rod connected with the extension apparatus and the whole procedure was completed in a few minutes. A plaster-of-Paris case was applied round the seat of fracture and included the pelvis. When the fracture is firm the rod is easily pulled out with forceps, as in the course of a week or two it becomes loose. The holes in the skin heal quickly under a dressing.

A great advantage of this method is that it is possible to prevent the rotation of the lower fragment on its long axis. Another advantage, as compared with ordinary extension, is that there is no risk of stretching the ligaments of the knee. The method is specially applic-

able to complicated fractures of the thigh. In the leg also it may be used by inserting the rod through the bones just above the malleoli (*Centralbl. f. Chir.*, Leipzig, 5th December 1908).

The Surgical Treatment of Gastric Ulcer.

This subject was discussed at a meeting of German naturalists and surgeons, held at Cologne in 1908 (*Centralbl. f. Chir.*, Leipzig, 28th November 1908). The statistics from Von Eiselsberg's clinique, embracing 246 cases of gastric ulcer, go to show that when the ulcer is at some distance from the pylorus, gastro-enterostomy yields unsatisfactory results, and that it is better either to perform jejunostomy alone, or combined with gastro-enterostomy, or to excise the ulcer.

Kausch is of opinion that the mortality would rise enormously if ulcers situated on the lesser curvature were systematically submitted to circular resection. Payr, on the other hand, is a strong advocate of excision of the ulcer, and even if the pancreas is fused with the affected part of the stomach he does not hesitate to separate the viscera, as the hyper-acid gastric contents are very slightly infective.

From the point of view of diagnosis, Riedel points out that when the ulcer is on the lesser curvature, whether on the anterior or posterior wall, provided it is in the pyloric portion of the stomach, the pain is referred exactly to the middle line. Ulcers to the left of the pyloric portion give rise to pain which is localised under the left costal margin, sometimes also in the back. With regard to operation, he agrees that gastro-enterostomy does no good in ulcers far from the pylorus. Simple excision of the ulcer is only satisfactory in very small ulcers which are ready to perforate. For the majority of cases he recommends resection of the middle section of the stomach, and he considers this procedure imperative when the cardiac portion of the stomach is contracted into a narrow tube.

OBSTETRICS AND GYNECOLOGY.

By A. H. F. BARBOUR, M.D., LL.D., F.R.C.P.,
Lecturer on Gynecology,
and
B. P. WATSON, M.D., F.R.C.S.,
Gynecological Tutor, University of Edinburgh.

Duration of Stay in Bed in the Puerperium and after Abdominal Section.

For some time past it has been the custom in certain hospitals, especially in Germany, to allow patients to leave bed at a much earlier date than formerly after childbirth and abdominal operations.

Recently papers have appeared giving the results of this treatment, and a perusal of them leads one to the opinion that our old ideas on this subject may require some modification, and that a prolonged convalescence in bed may not always be so beneficial to the patient as we have been in the habit of supposing. At the same time, we must guard against the other extreme, for it is difficult to see what benefit can result to the patient by allowing her out of bed on the first day after labour or abdominal section, as is the practice in certain of these Kliniks.

While it is in Germany that the early rising of patients after laparotomy finds most advocates, and has been most practised, it was an American surgeon, Ries of Chicago, who, in 1899, first wrote on the subject. In Germany one of the first to treat his cases after labour and abdominal section by what may be termed the "ambulant method" was Krönig of Freiburg, and his example has been followed, with apparently good results, by many other operators.

From Pfannensteil's Klinik in Kiel two papers appear, one dealing with puerperal and the other with post-operative cases. V. Alvensleben (*Zent. f. Gyn.*, No. 36, 1908) gives a summary of the results obtained by allowing a hundred puerperal patients to leave bed during the early days of the puerperium. Of these hundred cases, three rose on the first day, sixty-one on the second, nineteen on the third, and eighteen on the fourth day after labour. He explains that they first began by allowing only primiparæ, who had uncomplicated labours, to rise so soon; but the results were so good that ultimately multiparæ also were allowed to leave bed during the early days. The patients were given to understand that they could get up whenever they felt inclined, unless they had definite orders to the contrary. None of them were forced to leave bed, but, as will be seen from the statistics, the majority were up on the second day. From the time of confinement the patient is encouraged to exercise the abdominal muscles by indrawing movements and by raising the body, while the pelvic and leg muscles are also exercised. The first time she leaves bed she is only up for an hour, and spends most of the time in a reclining chair, but takes a few steps. Next day she is up for an hour, both forenoon and afternoon, and walks a little more. By the fifth day she is up for six hours, care being taken always to allow a two hours' rest in bed after the midday meal. While up, the patient wears a strong linen abdominal binder and a perineal pad.

Of the hundred cases so treated, ninety made an absolutely uninterrupted recovery, leaving a puerperal morbidity of 10 per cent., as contrasted with a morbidity of 17 per cent. in cases treated in the ordinary way in the same Klinik. In only six instances had the patients to return to bed again—three for general feebleness, one for excessive lochia, one for irregularity of pulse due to myocarditis, and one for

varicose veins in the legs. Ten had slight rises of temperature, this, in seven cases, being due to fœtid lochia in patients who had had a previous cystitis.

As far as these cases go the early rising of the puerperal patient seems to be attended by a diminished immediate puerperal morbidity, and the ultimate results as regards involution of the uterus and the absence of prolapse are equally satisfactory. In the great majority the lochia alba appeared on the fourth day, and all discharge had ceased by the tenth day. By the tenth day the abdominal and pelvic muscles had to a great extent recovered their power, and the vaginal introitus become closed. In only nine cases was there any laxity of the vaginal walls, and eight of these were multiparæ and one a primipara with entroptosis. But what the author calls attention to especially is the position of the uterus and other pelvic organs in these patients. In eighty-four of the cases, examined on the tenth day and subsequently, the uterus was found to be markedly anteverted, resting on the bladder, with the cervix high up in the vagina and directed almost straight backwards, the whole uterus thus lying parallel to the plane of the pelvic inlet. Of the other sixteen cases, ten had the uterus lying only slightly anteverted, while in six it was retroverted, five of these being multiparæ. This strong anteversion of the uterus is of course the best preventative of prolapsus, and ensures that the normal direction of the vaginal axis will be retained.

As regards the general condition of the patients, nothing more satisfactory could be wished for. Appetites were good, constipation infrequent, in no case was the catheter required, and the circulatory and respiratory functions were in every way normal. The author is careful to point out that this early rising in the puerperium is a very different thing from early work in the puerperium, which is so frequent in the working classes, and which is such a common cause of prolapse. It is only such patients as can be trusted not to begin house-work, and who are under the immediate care of doctor or nurse, who can be allowed to leave bed at these early dates.

This question formed one of the principal subjects of discussion among the obstetricians and gynæcologists at the Versammlung deutscher Naturforscher und Arzte (*Zent. f. Gyn.*, No. 43, 1908), held in Köln in September of last year. A large number took part, and the majority had introduced into their hospitals the practice of allowing their patients to leave bed early. Krönig was able to speak from an experience of 1400 cases of confinement so treated. His results had been so good that in his last 200 cases as many as 83 per cent. had been out of bed the first day after confinement, these including normal and operative cases. In all, he had 918 cases where the patient had got up on the first day, and among them there was a puerperal morbidity of only 6·2 per cent., while if only the cases of spontaneous

and uncomplicated delivery were reckoned, the morbidity fell to 4·3 per cent. There had been no deaths. Puerperal thrombosis, which formerly had been fairly frequent in Freiburg, Krönig had not seen once in the last 1000 cases treated. On this question of thrombosis a great deal of discussion took place, it being held by Fromme (*Zent. f. Gyn.*, No. 43, 1908) and Veit particularly, that it was invariably septic in origin, while others believed that sepsis had nothing to do with it in the majority of cases. Whatever be its origin, all of those who had permitted the early rising of their puerperal cases were agreed that the proportion of cases of white leg had very considerably diminished.

The chief contra-indications to the early leaving of bed are—fever either before or after confinement, over 38° C. (100·4° F.); headache; complicated labours, such as placenta prævia or eclampsia; irregularity of pulse; rupture of perineum, provided it is efficiently repaired, and instrumental delivery form no contra-indication.

As regards cases of abdominal section, a good deal has also been written. At the discussion at Köln, Krönig (*Zent. f. Gyn.*, No. 42, 1908) mentioned that he had treated 800 cases of laparotomy by the "ambulant method." In his last 200 cases over 80 per cent. had got up the day after operation, and 95 per cent. within the first three days. The results had been uniformly good, the convalescence uncomplicated, and the functions of stomach, intestines and bladder much better carried on than under the old regime. In only one of these 200 cases did thrombosis of the femoral vein occur, and that in a patient who had had to go back to bed on the fourth day on account of severe headache, the thrombosis developing a few days later. Cohn, writing from Pfannenstiel's Klinik in Kiel (*Zent. f. Gyn.*, No. 38, 1908), records three cases of thrombosis in a hundred cases of abdominal section which were llowed to leave bed at periods varying from one up to seven days after operation. But, as in the case of puerperal patients, the consensus of opinion among those who have tried it seems to be that post-operative thrombosis is less frequent when the patient is allowed to leave bed early than when she is kept constantly in the horizontal position for a long time.

The rules laid down by most of the operators are much the same as those applying to puerperal patients, viz. on the first day up for an hour on a reclining chair, on the second day up twice and walk a little, and so on till on the fifth or sixth day the patient is up for six or seven hours and walks about freely. Stress is laid on the point that the patient ought not to be allowed to leave hospital till the end of two or three weeks, so that she may be kept under observation and prevented from subjecting herself to any excessive strain. Most of Krönig's patients had been operated on under spinal anæsthesia, and he at first laid this down as a *sine qua non* for the early rising of laparotomy cases. Cohn, however, states that in Pfannenstiel's Klinik many are operated

on with ether anæsthesia, and they do equally well under the ambulant treatment.

One of the most important points that comes up in connection with these cases of abdominal section is the healing of the wound and the possibility of a subsequent hernia. In Germany now the majority of abdominal gynæcological operations are done by means of Pfannenstiel's transverse supra-pubic incision, in which the fascia is divided transversely and dissected up off the rectus muscles, and then the peritoneum opened vertically between the muscles. With this incision the chance of hernia is reduced to a minimum, and it is the method which ought, if possible, to be adopted if the patient is to be allowed to leave bed early. This transverse incision, however, cannot be used in the case of large fibroid tumours, where a long vertical incision is necessary. Even in these cases Krönig allows the patient up early, although Cohn states that in Kiel such are not allowed to leave bed before the end of the first week. Krönig states that the healing of the wounds had been good, and in seventy-six cases which he has seen one year subsequent to operation there has been no evidence of hernia.

Faure (*La Gynécologie*, July 1908) criticises the position taken up by the German operators in allowing their patients to get up on the day subsequent to operation, but he admits that the old rule of three weeks in bed after abdominal section is probably excessive, and now allows his patients up on the twelfth day. He points out that in the upright position there is very much less strain on the abdominal wall than there is when the patient is lying on her back, especially if there be vomiting, or if she attempts to raise herself on the hands or elbows, and has to make straining efforts during defæcation and micturition. He further thinks that the danger of thrombosis will be much less if the circulation is stimulated by change of position, than if it is allowed to stagnate by keeping the patient constantly lying on her back. By the twelfth day the wound is firmly healed, and he has found that his results in the past two years, during which he has adopted this method of after-treatment, have been uniformly good; his patients usually leave hospital on the fifteenth day.

Much the same views were expressed by Chase at the annual meeting of the American Association of Obstetricians and Gynecologists at Baltimore this year (*Amer. Jour. of Obst.*, November 1908), and endorsed by those taking part in the discussion, and probably the majority of British operators will do the same.

Whether the German patient differs from the patient we have in this country we are not prepared to say, but we doubt whether, were they given permission, the majority would choose to leave bed on the day following confinement or laparotomy. Nevertheless this discussion is full of interest, and on the whole tends to show that our post-partum and post-operative treatment may be inclined too much in the direction

of conservatism. Perhaps this applies more particularly to confinement cases in private practice where it is not uncommon to keep the patient in bed for three weeks or even more. Given a healthy woman who has been taking fairly active exercise up to the time of her labour, who has had a normal labour and is making an uninterrupted recovery, this long period of inactivity cannot but result in softening and atrophy of the muscle and connective tissue, stagnation of the bowels and stomach, and general debility. By an earlier return to her former habits she would probably be less liable to retro-displacements of the uterus and prolapse, and the minor ailments which are so common in this class of patient.

MEDICAL JURISPRUDENCE.

By HARVEY LITTLEJOHN, M.B., F.R.C.S.,
Professor of Medical Jurisprudence in the University of Edinburgh.

Sudden Death in Infancy.

Two papers dealing with this subject in the *Aerztliche Sachverständigen Zeitung* (No. 19, 1908) are of great interest.

The first, by Finkelstein, controverts the views of Richter, who holds that in the majority of cases of sudden death of young children a sufficient cause of death is to be found in pathological conditions of the lungs or alimentary tract.

Finkelstein states that in a large number of infants which are receiving the most careful attention death occurs unexpectedly, and that the most minute post-mortem examination fails to disclose any satisfactory cause. Such cases also occur constantly in hospitals for the treatment of infants, and he, therefore, has come to the conclusion that there are children affected with a constitutional tendency to sudden death.

In one group of such children death occurs from heart syncope, either suddenly or from collapse, which may last for several hours. Many such children suffer from what he characterises as the spasmophile diathesis, a condition doubtless due to defective metabolism, since many children can be cured by a proper diet. The second group of sudden deaths occurs associated with symptoms of a hyperacute febrile *toxæmia*, evidently also arising in the alimentary system. Finkelstein affirms his belief in the status lymphaticus as a cause of sudden death.

The second paper is by Strassmann, who treats the question from the aspect of the medical jurist. During the year 1906, of 282 medico-legal post-mortem examinations, 44 pertained to young infants, all of whom died unexpectedly, without having been medically attended and without previous symptoms of illness, the majority having been found

dead in bed. Infants under a few weeks old were excluded. All except 2 were under 1 year old, the two exceptions being under 2 years of age. Strassmann says that after the second year of life sudden death rarely occurs until a period considerably after puberty. Of the 44 cases the body in 1 was too much decomposed to afford satisfactory conclusions. In 1 other the cause of death was suffocation by inspired food, but in the remaining 42 the pathological examination disclosed either the presence of a bronchial catarrh or of intestinal catarrh or both combined. In several death occurred in a convulsion fit, and in many there was degeneration of the heart muscle. In only one case the post-mortem examination appeared to afford grounds for suspecting criminal negligence—a suspicion which was not substantiated by the circumstantial evidence.

These results, Strassmann thinks, tend to substantiate the view of Richter, that in almost every case of sudden death in infancy a satisfactory and sufficient pathological cause can be found. On the other hand, he admits that these conditions may possibly be regarded only as the cause of the death, in a secondary or narrower sense, and that perhaps in many of the cases death is due to the conditions, undiscoverable by post-mortem examination, described by Finkelstein.

The Alleged Relation of the So-called Mors Thymica to Sudden Death in Children (*Vierteljahrschrift f. Gericht. Med.*, Bd. xxxvi., H. 1).—As a result of the study of the thymus of 200 children examined post-mortem in the Medico-legal Institute of Vienna, Kurt v. Sury arrived at the following conclusions:—

No case of alleged thymus death in infancy has been conclusively proved, because in none has the possibility of an aspiration asphyxia been excluded by means of an examination of the bronchial contents. The lumen of the trachea is, in infants, transversely oval in form, and contracts in process of hardening, thus rendering it difficult to express an opinion as to its compression. In like manner the flattening recorded beneath the arch of the aorta and in other places subjacent to large vessels are without any pathological significance. The size of the thymus as a rule corresponds to the state of nutrition of the child, and is, as a rule, overestimated. Sudden death cannot be explained by the mechanical effect of such normal glands, and is to be attributed to natural causes, such as bronchitis or enteritis—conditions which are frequently overlooked.

It is true that the total or partial removal of the thymus alleviates conditions of chronic respiratory difficulty, stridor and attacks of suffocation in young children. The reason for this is however not yet determined. There is likewise no proof that a thymus of normal size compresses either blood-vessels or nerves.

The Murder of Six Children by Means of a Hat-Pin Penetrating the Skull).—Bihler (*Zeitschrift. f. Med. Beamte*, No. 18, 1908) records the

murder of six children by a nursemaid, by means of a hat-pin forced through the large fontanelle into the brain.

In all of the cases the children were supposed to have died from natural causes, and had been buried for periods of fourteen days up to a year and a half.

The girl confessed the crimes, and the bodies were thereupon exhumed.

Only in the body of the most recent victim was it possible to obtain satisfactory post-mortem evidence of injury. In this case a small superficial blood suffusion in the scalp, together with a minute scab about the size of a pin head, were the only external signs of violence. On the under surface of the scalp there was a somewhat larger extravasation of blood, and in the membrane covering the fontanelle which was not completely closed, although the child was 1½ years old, here were two punctures corresponding in size to such as might be made by a hat-pin. The dura mater showed similar wounds, and there was some extravasated blood on the surface of the brain. The brain itself was too diffluent to permit of examination.

Owing to advanced putrefaction, the examination of the remaining bodies yielded no definite traces of injury. The accused, who was only 14 years of age, was sent to an asylum, and, after observation there, was declared to be of unsound mind.

It is interesting to note that the infant whose case is more particularly referred to above was noticed on the forenoon of the day previous to death to be restless, and a neighbour stated that she heard it crying loudly. It was quieter during the afternoon, but would not take food. Next morning the parents, who were field-workers, left word that a doctor was to be fetched if it was not better. At midday it was found dead in its cot. The author points out that no blame can be attached to the doctor who was called in to certify death, as there was practically nothing to indicate death from violence, or to arouse suspicion even on the most careful examination, and he very rightly calls attention to the ease with which this form of murder may be committed, and escape discovery even after a post-mortem examination. He finds that while the majority of books on medical jurisprudence omit to mention this method of causing death in young children, yet that amongst lay persons it is well recognised, and is not infrequently referred to by older medico-legal writers, and also in modern works of fiction.

Lead Poisoning Produced by Wall-Paper.

Becker (in the *Zeitschrift. f. Med. Beamte*, No. 11, 1908) records the case of a family, consisting of the father, son and daughter, the latter aged 31 and 26 years respectively, who suffered from well-marked symptoms of lead poisoning, which necessitated their treatment in

hospital. They quickly recovered, but, on returning home, the symptoms reappeared.

After prolonged investigation of the cause it transpired that about three months previously the walls of the living-room and bedroom had been newly papered. On testing the papers they were found to contain 0·897 grms. and 0·741 grms. of lead to the square centimetre. The lead was in the form of chromate, which, being insoluble in water, was attached to the paper by means of a fixative agent. Articles, such as clothes, coming in contact with the paper caused lead to become detached and distributed in the air in the form of dust. In this way the poison was imbibed into the system.

The author found that lead was largely used in the wall-paper industry, and he attributes the comparatively small number of cases of lead poisoning attributed to this source to the fact that chronic poisoning is frequently overlooked.

The Determination of the Age of Blood Stains.

Lecha-Marzo (*Arch. Gén. de Médicine*, No. 3, 1908) gives the results of experiments he made to determine this question based on the colour scale of Tomellini.

Tomellini suggested a scale of colours by which the age of a blood stain might be determined. He caused drops of blood from veins and arteries to fall on white linen, and then observed the colour which the stains presented at intervals of hours, days and months.

Lecha-Marzo, in the examination of a given blood stain, finds the colour in Tomellini's scale, with which it is exactly similar. He then allows a drop of blood from his own finger to fall upon a piece of fabric, the same as that upon which the stain to be investigated is found. The control stain is then observed while exposed to the same conditions as those to which the original blood was subject, and the colour changes, together with the time of their appearance which corresponds with that, are noted until the tint of the stain under investigation is obtained. The determination of the age of a stain by this method is only approximate.

It appears to give fairly reliable results if stains are only a few days old and have been exposed to diffuse light. Blood protected from light undergoes little change. Ten hours' exposure to direct sunshine causes as much change in blood as exposure for six days to diffuse light.

Three Cases of Rupture of the Coronary Veins of the Heart.

In the *Archivio di Psichiatria, Neuropathologia*, Fasc. I.-II., 1908, Dr. Pepere records three instances of this rare condition.

All of the cases occurred in women, whose ages ranged from 59 to 79, and in none was any definite cause of the condition discovered, pathological changes in the circulatory system and internal organs being absent, or only present to a negligible degree.

The seat of the rupture in two of the cases was the margin of the right ventricle, and in the third it was situated posteriorly. As regards etiology, there was no history of injury or disturbance of the circulation. It might be suggested that the origin lay in an affection of the trophic centre leading to degenerative changes in the vessel walls, but this seems unlikely, looking to the localisation of the lesion.

DISEASES OF THE THROAT, NOSE AND EAR.

By R. M'KENZIE JOHNSTON, M.D., F.R.C.S.,
Consulting Surgeon,
and
J. S. FRASER, M.B., F.R.C.S.,
Assistant-Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

The Pathology and Surgery of the Tonsils.[1]

Rosenheim discusses the various theories as to the functions performed by the tonsils. It is generally admitted that lymphocytes are formed in the germinal centres, and that these pass out towards the periphery and force themselves, or are forced, between the epithelial cells covering the surface of the tonsil or lining the crypts. Some writers consider that this process renders the tonsil specially vulnerable, and others hold that it is protective in character. The two opposing views have been termed the protective and infective theories. The writer gives a list of the diseases that have been attributed to infection by way of the tonsils. This includes appendicitis, meningitis, pleurisy and pericarditis, pneumonia, parotitis, nephritis, osteomyelitis, tuberculosis, and, finally, rheumatism. In the same issue West describes a method for complete enucleation of the tonsil. Local anæsthesia is strongly and rightly recommended, as it diminishes the bleeding, enables the operator to see what he is doing and lessens the risk of inhaling blood into the air passages. Schleich's method is used, and the weak cocaine solution is injected at different points around the tonsil. With very nervous patients a hypodermic of morphia is useful. The operation may be divided into four steps—

I. The tonsil is grasped and pulled forwards with a pair of toothed

[1] "The Tonsillar Ring . . . as Portals of Entry of Infectious Diseases," by Sylvian Rosenheim, M.D., *Johns Hopkins Hospital Bulletin*, November 1908; "A Method for Complete Enucleation of the Tonsil," by John A. West, M.D., *ibid.*

forceps, and with an L-shaped knife is completely separated from the posterior pillar.

II. The tonsil is now pulled towards the middle line, and an incision is made with a straight, sharp-pointed knife from the lower end of the original incision below, in front of and finally above the tonsil to meet the first incision again at the upper end; no attention is paid to the *plica triangularis*.

III. Pulling the tonsil with the forceps well out into the mouth, cut through the loose connective tissue between the capsule of the tonsil and the superior constrictor, beginning above and posteriorly; if the bleeding is slight the dissection may be completed with this knife alone.

IV. If the hæmorrhage is considerable it is better to use a probe-pointed bistoury for the final step, and to cut from below upwards.

For the control of hæmorrhage after operation West recommends that a plug of gauze be at once pressed into the cavity between the faucial pillars with a pair of nasal forceps. If this fails the vessels should be caught with specially constructed clamps. This method of operating is very similar to that recommended by Ballenger. The abstractors would mention that elaborate knives and forceps are not essential, and that good results can be obtained with volsella and a pair of blunt-pointed scissors curved on the flat.

The Female Genital Organs and Intra-Nasal Treatment.[1]

Von Fleiss is the apostle of intra-nasal treatment in disorders of the female organs of generation. This writer has described circumscribed hypertrophic spots on the mucous membrane of the inferior turbinal and tubercle of the septum to which treatment must be directed. Kuttner considers that certain cases of dysmenorrhœa can be cured, or at least favourably influenced, by treatment of the nasal mucosa with cocaine, menthol and other remedies, but thinks that this result is not due to any connection between the nose and the female sexual organs, but to the constitutional effect of cocaine and improvement in the general health. Koblank, as the result of his observations in midwifery cases and disorders of the female generative organs, comes to the following conclusions:—Gentle application of 20 per cent. cocaine to the nasal mucosa diminishes labour pains, but does not completely remove them; the effect of the drug passes off in an hour, and further application is useless: the effect is more marked in cases where the nasal mucosa was much swollen; this line of treatment does no good in pathological conditions, such as rigidity of the os, adherent chorion or distension of the membranes. Interruption of pregnancy by nasal

[1] Kuttner, "Die Nasale Dysmenorrhœ," *D. Med. Wochensch.*, 24/8. Koblank, "Ueber Nasale Reflexe," *ibid.*

treatment is not possible. As regards gynecology, the application of cocaine to the nasal mucosa is only of diagnostic importance, *i.e.* if a genital pain is influenced for a time by painting the nose with cocaine it can be permanently cured by cauterising the hypertrophic spots or by electrolysis. Amenorrhœa, dysmenorrhœa, menorrhagia and cervical catarrh can be treated by the nasal method. Koblank has also obtained good results in cases of sterility. Out of 12 cases treated by him in this way 9 became pregnant, 4 immediately after the treatment and 5 some months later; several of these patients had been sterile for 10 years. Finally, certain results of an unhealthy sexual life and abnormal sexual desires, so long as they are not congenital or deep-rooted, can be removed or diminished by nasal treatment. When we remember the brilliant results once promised in cases of asthma from the same line of treatment, and the frequent disappointments encountered, we may recall the witty remark attributed to Billroth—"All remedies are marvellous; only you must use them within a month of their introduction."

The Drainage Mechanism of the Normal Accessory Sinuses.[1]

The drainage of the accessory sinuses is influenced by gravitation, in a slight degree, in certain positions of the head. The frontal sinus is the only one in which the ostium is favourably situated for drainage, but even in this case the channel is long and narrow. The secretion in the sinuses can escape at best only in a slow and intermittent manner, for when a liquid flows from a vessel with a narrow outlet it escapes in jets, each jet being followed by the entrance of a bubble of air into the vessel. Yankauer holds that drainage is chiefly effected by ciliary action, adhesion, capillary attraction and syphonage. Ciliary action is favoured by heat, by a proper degree of fluidity and by alkaline reaction of the secretion. The direction of ciliary motion is always towards the ostia of the sinuses, and it is important to note that atrophic rhinitis, in which the cilia are destroyed, is frequently associated with sinus disease. In regard to capillary attraction, the author is of opinion that the *hiatus semilunaris* exerts a considerable degree of capillary suction on the secretion which present themselves at the orifices of the frontal, antral and anterior ethmoidal sinuses. Syphonage comes into play when the secretion which has entered the nasal passages through the ostia has reached as far down as the level of the fluid within the sinuses. The nasal passages are the long arm of the syphon, which has several short arms, each represented by one of the sinuses. Suction only acts during forced expiration, *e.g.* sneezing, or forced inspiration, *e.g.* sniffing. Finally, Yankauer points out that the drainage of the sinuses may be artificially improved by the inhalation of the vapour

[1] Sidney Yankauer, *The Laryngoscope*, July 1908.

of warm water, especially if medicated by the addition of menthol, eucalyptus or Friar's balsam. Headache in the form of recurrent neuralgia is a common symptom of accessory sinus disease. If the above-mentioned inhalations afford even temporary or partial relief the author holds that it can be confidently stated that the cause of the trouble lies in one or more of the nasal accessory sinuses.

The Treatment of Tinnitus.[1]

As noises in the ear are purely subjective, we are forced to accept the word of the patient as to the value of any line of treatment adopted, so that it is necessary to examine a large number of cases before coming to conclusions. This paper by Sacher is, however, based on observations by Müller, Lamann, and the writer, extending over twenty-five years. It is in chronic middle-ear catarrh and otosclerosis that tinnitus is of most importance, never leaving the patient for a moment, making his life unbearable, and sometimes leading to suicide. These patients do not in many cases object so much to the deafness as to the constant noises in the ear. General treatment, along with the use of the catheter, bougie, or aural massage, do not, as a rule, benefit the tinnitus and are actually harmful in otosclerosis. Sacher does not know the origin of the treatment of tinnitus by corrosive sublimate, but the earliest references are to Hinton and Toynbee. In most of the cases referred to by Sacher no notes had been taken, but a more or less detailed account is given of 80 patients recently observed; these were about equally divided between chronic catarrhal changes and otosclerosis: 40 of these were much improved, 20 improved, and 20 unrelieved by the corrosive sublimate treatment. This remedy was given in pills, each containing $\frac{1}{64}$ grain made up with extract of gentian. Fifty pills were ordered —one to be taken twice daily after meals. As a rule at the end of the first month there was considerable improvement, but patients are instructed not to expect a decided change till 100 pills have been taken; if this number fails to do any good the treatment should be abandoned. The improvement lasts for half a year as a rule, but a second course of treatment is successful in one month. It is advisable to begin the treatment in autumn, as many cases are worse in winter. Sacher states that bromides, iodides, quinine and cimicifuga had all failed in many of the cases which yielded to corrosive sublimate; this drug has, however, no beneficial effect on the deafness except in so far as it relieves the tinnitus. Minute details of several cases are given by Sacher, but no theory is advanced as to the mode

[1] "Corrosive Sublimate in the Treatment of Tinnitus in Cases of Chronic Non-Suppurative Processes in the Middle Ear," by A. Sacher, *St. Petersburger Med. Wochenschr.*, No. 40, 1908.

of action of the drug. Recently the author has used it with success in cases of tinnitus dependent on *otitis interna*.

Hereditary Degenerative Deaf-mutism.[1]

Hammerschlag records the case of a male, aged 16, one of seven children; the parents were not blood relations and the other members of the family were healthy. The parents stated that the patient was born deaf, and that he only began to walk at the age of $3\frac{1}{2}$ years. There was no history of deaf-mutism in the family. Otoscopic examination showed normal appearances, but the sense of hearing was completely absent, as there was no reaction to loud noises and the child never tried to talk. Examination of the eyes showed pale blue iris and rotary nystagmus increased on looking to the right or left; the fundus slightly resembled that of an albino. The boy's forehead was narrow, the upper jaw prominent, and the palate highly arched; the left testicle had not descended at the age of 11. In the middle line of the head there was from vertex to forehead a strip of white hair as broad as three fingers. The child showed a high degree of imbecility, and had to be sent away from the deaf and dumb school, as teaching was impossible. The patellar reflexes were feeble and there was marked ataxy of the upper extremities; the child walked in an uncertain manner and with a broad base, the upper part of the body swaying to and fro like that of a drunk man; slow walking was more difficult than running—the *equilibre du velocipede* of French writers—the child being unable to stop without catching hold of something. For these reasons Hammerschlag regards the case as one of hereditary degenerative deaf-mutism, in spite of the absence of a characteristic family history, and points out the analogy between such a case and the conditions found in pure-bred Japanese dancing-mice. In these creatures the skin is piebald and the fundus albino-like. The writer further points out that congenital idiocy is much more frequent among congenital deaf-mutes than would be supposed from the writings of aural surgeons, because the latter have obtained their material from deaf and dumb schools, from which the congenital idiots have been sent away after a very short period. The nervous condition present was diagnosed as Friedreich's ataxia, and Hammerschlag thinks that it is not a mere coincidence that in this case hereditary deafness and hereditary ataxia were conjoined.

[1] Hammerschlag, *Zeitschr. für Ohrenheilk*, B. lvi. H. 2.

NEW BOOKS AND NEW EDITIONS.

Squire's Companion to the British Pharmacopœia. By Peter Wyatt Squire. Eighteenth Edition. Pp. 1417. London: J. & A. Churchill. 1908.

A book which has stood the test of fifty years and has passed into its eighteenth edition must long ere this have justified its existence. A glance at *Squire's Companion to the British Pharmacopœia* will at once show those unfamiliar with the work how much useful information it contains, for both the practitioner and for the pharmacist. Since the seventeenth edition was published there has been a marked advance in chemistry as applied to pharmacy, and in the remedial agents which are recognised by the physician. This advance has necessitated many additions to the work, and a complete revision and rewriting of much of the volume.

Like the *Pharmacopœia*, the volume is arranged in alphabetical order, but there is, in addition, a careful index which makes reference easy. To the prescriber as to the dispenser much interest will attach to the very full discussion of the solubility of different substances. The subject has received close attention, and in the use of those substances which are very soluble in a menstruum the increase of volume caused by their solution is given—a most useful and practical addition to the work.

Under the heading "Medicinal Properties" we have a full and detailed account of all the different pathological conditions for which any given remedy has been prescribed. It is perhaps inevitable that such a work should at times show a childlike faith in the value of drugs, but we do not suppose that the practitioner will necessarily regard the work as his authority on therapeutics.

Under "Prescribing Notes" the physician will find much very valuable information which has been considerably extended in the present edition. If he consults the *Companion to the Pharmacopœia* as to the prescribing of a given drug he will find his way made easy and will avoid those pitfalls of incompatibility which have done so much to make the modern tabloid and proprietary remedy so popular. A point on which the *Companion* is strong is the tests for and the chemical assay of different substances. Here is to be found not only the tests of the *British Pharmacopœia*, but of those incorporated in the *Pharmacopœia* of Germany and the United States, with such further tests as have been found useful in the laboratory of the author. Still further, a number of the tests are given from the *French Pharmacopœia* published last September, which brings the present volume well up to date. The standardisation of preparations is a subject on which much work still requires to be done. In the present volume we find a compendium of

the most recent research on chemical assay. We can but agree with the author that "the so-called physiological standardisation of galenicals leaves much to be desired." Still it is of undoubted value, and perhaps may be considered in a future edition when one may hope that it will have been placed on a sounder basis.

To the practitioner an interesting addition to the present volume is a short article on therapeutic agents of microbal origin.

The eighteenth edition of *Squire's Companion to the Pharmacopœia* can be commended as a worthy successor to the volume which had a recognised position and had proved valuable alike to the physician and to the pharmacist. It contains much that is new and useful. As a book of reference it will be recognised as an authority on the principal subjects with which it deals.

The Diagnosis of Small-Pox. By T. F. Ricketts, M.D., B.Sc.(Lond.), M.R.C.P., D.P.H. Illustrated from Photographs by J. B. Byles, M.B., B.C.(Cantab.), F.R.C.S.(Eng.), D.P.H. With 12 Coloured Plates, 110 Black and White Plates, and 14 Charts. Pp. 154. London, Paris, New York, Toronto and Melbourne: Cassell & Company.

The practical value of modern photographic illustration has probably never been better exemplified than in this authoritative monograph on the diagnosis of small-pox. Every possible phase and distribution of the variolous eruption are shown in a series of photographic plates, which are so extraordinarily good in themselves, and so admirably reproduced, that they are to a great extent capable of affording information, which, as a rule, can only be acquired at the bedside of an enormous number of patients. Almost every condition, the cutaneous appearances of which are liable to be mistaken for small-pox, is also adequately illustrated. Not only chicken-pox and measles, but various forms of erythemata, syphilides, and pustular and eczematous eruptions are shown in detail, and the peculiarities of their distribution on the skin surface, and in many instances the character of their lesions, are readily appreciated. A fair number of the plates are stereoscopic, but, even without the use of an instrument, they express very clearly what they are intended to show. There are twelve colour photographs, most of them exceedingly good, and we particularly notice one of a hæmorrhagic eruption on the thigh, which is not only a perfect representation of the condition which it illustrates, but is also a real triumph in colour photography. It cannot be doubted that, with these plates before him, the practitioner, who carefully studies the letterpress, will approach the question of the diagnosis of small-pox with a much greater

feeling of confidence than it has been possible for him previously to have.

It is only right to say that the book itself, quite apart from its illustrations, is certain to take a high place in medical literature, and, we are inclined to believe, may ultimately become a classic. Dr. Ricketts has had a vast experience of small-pox, and for fifteen years he has been engaged in the study and teaching of this subject. He arranges his matter admirably, laying great stress on what he considers most important, namely, the distribution of the eruption, and touching more lightly on other points which, in many text-books, have been quite unduly emphasised. Indeed we suspect that if Dr. Ricketts were asked to give the three main points in the diagnosis of small-pox, he would reply, "distribution, again distribution, always distribution." Those who have much practical experience of small-pox will, doubtless, cordially agree with this dictum, and anyone bold enough to question it would have considerable difficulty in explaining away the dozens of photographs which prove its importance. It is impossible to summarise briefly the main views expressed in the book. They are already as tersely expressed as is possible, and every page is well worthy of study. It may be well to note, however, that Dr. Ricketts adopts a more simple classification of hæmorrhagic small-pox than that usually given. He does not consider that a definite line separates this particularly fatal class of case from others only slightly less serious, and he prefers, on the analogy of the nomenclature of scarlatina, to speak of these cases as "toxic," cases, in fact, due to the actual poisons of the disease and not to the results of skin suppuration. There is little doubt that the varieties of malignant cases previously described were needlessly elaborated, and we have found at times great difficulty in attempting to classify individual cases. It may be added that some of Dr. Ricketts's phrases are likely to linger long in the mind of the reader—"The armpit, in particular, is a mine of information," is an axiom not likely to be forgotten, and there are many striking and brief statements of this character in the book. In conclusion, we may say that we regard the treatise as a necessary part of the equipment of every small-pox hospital in the kingdom, and we also cordially recommend it to the notice of general practitioners and skin specialists.

A Manual of Infectious Diseases. By E. W. Goodall, M.D., and J. W. Washbourn, C.M.G., M.D. Second Edition. Revised and Enlarged. Pp. 426. London: H. K. Lewis. 1908.

This excellent manual is already so favourably known that it is almost unnecessary to do more than extend a cordial welcome to

its second edition. The lamented death of Dr. Washbourn has left the task of revision entirely in the hands of his colleague, and, while successfully preserving all the original characteristic features of the book, Dr. Goodall has brought it most thoroughly up to date. The most important additions are chapters on Glanders, Plague and Cerebro-spinal Fever, and the section on the latter disease gives a most admirable and concise summary of all the most recent work on the subject. The chapter on Enteric Fever has been much extended and in many places entirely rewritten, and that part of it which is devoted to the discussion of perforation and its operative treatment is especially lucid and interesting. Dr. Goodall's experience of intubation, since the last edition was published, has led him to give a much more prominent place to this operation for laryngeal obstruction, and we can hardly doubt that this change of attitude will do much to encourage the more frequent employment of intubation in this country. We notice with pleasure that the reviser considers that a detention of more than four or five weeks is unnecessary in mild cases of scarlatina, and that he holds that there is no clinical evidence that the desquamation is infectious after the fourth week. This authoritative pronouncement, from one with such a wealth of practical experience, will do much to strengthen the hands of fever hospital authorities desirous of cutting down the undue period of detention so usually practised.

We are tempted to quote many of Dr. Goodall's views on the different infectious diseases, as the perusal of his book raises many most interesting and practical questions, but it will be sufficient to say that he has succeeded in giving a condensed and extremely practical account of the diseases of which he treats. His suggestions for treatment are in every case sound, and supported by reasoned facts, and the sections devoted to diagnosis are most instructive. As in the first edition, the preliminary chapters on Rashes and on the Various Forms of Sore Throat will be found very useful.

The diagrams illustrating the distribution of the various rashes are wisely retained. They form an original and useful feature of the book, and for the most part are absolutely above criticism. But, although admittedly diagrammatic, the sketch of the distribution of the typhus rash appears to us to leave a very wrong impression as to the size of the lesions on the skin. These are represented as of far too large a size, especially when compared with the diagrams of the other exanthemata, and might be, with advantage, reduced in a later edition.

An entirely new feature in the book is the large number of photographic illustrations of rashes. These are, for the most part, excellent, those showing small-pox and chicken-pox being particularly good. An iodide rash is also illustrated, and different forms of

erythema liable to be confused with the exanthemata are also shown, and emphasise well the difficulties of diagnosis. The micro-photographs of bacteria, which appeared in the first edition, have been reduced in number. Those which remain are exceedingly well reproduced. We cordially recommend Dr. Goodall's manual to both students and practitioners.

The Prevention of Tuberculosis. By ARTHUR NEWSHOLME, M.D., F.R.C.P. Pp. 414. London: Methuen & Co. 1908. Price 7s. 6d. nett.

THIS is the latest volume of the "New Library of Medicine," and contains much that will be of interest and instruction to the "intelligent layman," besides a good deal that will puzzle him not a little. Dr. Newsholme is well known as one of the ablest of living medical statisticians, and he bases a large part of his argument on the foundation of figures. The work is divided into three parts, dealing with the causation, the incidence and the annihilation respectively of tuberculosis. As the whole attack upon tuberculosis will depend upon the knowledge of where it is to be found, the author's opinion as to causation is of great importance. He leans much more decidedly towards Koch than towards Von Behring. For him the tuberculous sputum is practically the only factor that counts, all others being merely adjuvants, Von Behring's theory of the disease as arising through bacilli of bovine origin remaining latent in the bodies of young children being treated as of quite minor importance. It must be said that the argument is very carefully developed. It begins when the author minimises so far as possible the mortality in children from tabes mesenterica, which is so important a point with the Von Behring school. The chapter on Infectivity gives a selection of cases of great interest as showing the frequency of direct infection by the members of a family from one to another. These are all assumed to be directly infected, though milk supplies and extraneous sources of infection are not excluded. In a subsequent chapter dealing with the occurrence of bovine tuberculosis in man it is laid down that only from 5 to 10 per cent. of human tuberculosis is derived from bovine sources. Similarly, in the section devoted to the incidence of the disease, those factors which are generally supposed to play so important a part, such as urban as against country life, overcrowding, pauperism and so forth, are all made to play a subordinate *rôle* to dust, *i.e.* dried-up sputum. Based thus upon the Koch position, the ultimate objective is clear, namely, segregation of the sick. Nothing, it would appear, in the campaign against tuberculosis has had anything like the effect upon it that segregation has had. As the mortality in England and Wales from phthisis amongst the working-class population appears to be 28,000, and taking the author's estimate that for each death there may be ten

cases alive, this would give an army of 280,000, for which accommodation would have to be found—a proposition somewhat in advance of public opinion, especially as it would apparently cost about ten millions sterling. In a work of this kind, written primarily for the "intelligent layman," perhaps it would have been more educative to have given him in greater prominence the other theory of causation, in which infected milk fed to infants is the chief cause—the theory of Von Behring. This seems the only omission in a work of very great value, not only for the clarity of its argument, but for the chapters in the second part dealing with the statistical evidence; some of these, such as that dealing with tuberculosis and general health, are models of statistical inquiry, and, while they are probably beyond the grasp of most laymen, should be studied with advantage by all who are specially interested in sanitation.

First Lines in Dispensing. By E. W. Lucas, F.I.C., F.C.S. Pp. 166. London: J. & A. Churchill. 1908.

The preface states that this little volume is intended for the instruction "primarily of students, nurses and others whose calling necessitates an acquaintance with the art of compounding medicines." It seems to us rather too comprehensive for nurses, who can reasonably be expected to dispense only in the very simplest manner, and who are not supposed to be acquainted even with the little Latin customarily used in prescribing. On the other hand, it is admirably adapted for the instruction and guidance of medical students, and of doctors who dispense their own drugs. The instructions and directions are given in clear and simple language, and are of a very practical value. Weighing, measuring, heating, filtration, labelling and other similar matters are first considered, followed by a short account of the prescription as ordinarily written in this country. The remainder of the volume is devoted to the compounding and dispensing of mixtures, pills, powders, suppositories and all the other forms in which medicines are customarily administered. There is also a short account of poisons and their antidotes. Altogether the book is a sound elementary guide to the practice of pharmacy.

Sprue and its Treatment. By W. Carnegie Brown, M.D. Pp. 259. London: Bale, Sons & Danielson. 1908.

Sprue is becoming such a common affection among Europeans, and is so frequently seen at home in patients returning from tropical countries, that the book under notice, which contains much valuable information gleaned from many sources, should be of great assistance to practitioners both at home and abroad.

The first seven chapters are devoted to the general consideration of sprue, the history, symptoms, morbid anatomy and diagnosis being fully discussed.

The historical portion forms most interesting reading, but in the morbid anatomy it is disappointing to find that no reference is made to the muscular changes so fully described and illustrated by Bramwell.[1] Moreover, after perusal of this portion of the book, one is forced to the conclusion that the author must have had but limited opportunities of studying sprue and hill diarrhœa in places where they co-exist. In attempting to describe the symptoms of hill diarrhœa some confusion results from the inclusion under this heading of the acute bilious diarrhœa, accompanied by abdominal pain and some constitutional disturbance, which frequently attacks people from the plains on first reaching a hill station. This condition, due to chill, combined with the effects of diminished atmospheric pressure, is quite distinct from true hill diarrhœa.

On the matter of the treatment of sprue by drugs and diet the author evidently writes from practical experience, and this, the greater part of the book, is full of useful information. There is hardly any disease in which the effect of diet is more marked than in sprue, and owing to the exhaustive manner in which the subject is treated in these pages we can recommend the book to anyone having such cases under treatment.

The Diseases of Children. Edited by Dr. M. Pfaundler and Dr. A. Schlossmann. English Translation, edited by Henry L. K. Shaw, M.D., and Linnæus La Fetra, M.D. With an Introduction by L. Emmett Holt, M.D. In Four Volumes. Pp. 440, 619, 552 and 543. Philadelphia and London: J. B. Lippincott Company. n.d. [1908.]

Pfaundler and Schlossmann's *Handbuch* is in many respects the most important contribution to pædiatric literature which has appeared in recent years, and it is only right that it should have been rendered more accessible to English-speaking physicians through the medium of a translation. Although the book extends to four bulky volumes, it is not to be compared to such works as Gerhardt's *Handbuch*, Grancher, Comby and Marfan's *Traité*, or Keating's *Cyclopædia*. It is less comprehensive than these, and the contributors, though numerous, are scarcely so representative, for we miss from among them the names of the chief German authorities on diseases of children. Still, such names as those of Neumann, Engel, Camerer, Stöltzner, Noorden, Pirquet, Bokay, Fischl and Thiemich are sufficiently well known, though of the body of contributors as a whole it may be said that they represent the

[1] *Scottish Medical and Surgical Journal*, October 1907.

younger school of German workers, particularly that which is associated with South Germany and Austria.

The principal article in vol. i. is an elaborate catalogue raisonné of symptoms. Opinions will differ as to the value of such a set of tables, but, granting that its utility justifies the labour its production entails and the space it requires, it would be difficult to pick holes in this one, which has been compiled by Pfaundler. We shall again have to speak of the translators' work, but it must be remarked here that the tables have suffered considerably in the process of translation. The original is a triumph of the printer's art, and by the use of varied type, and careful punctuation and bracketing, the "symptomatology," though a perfect mosaic of details, is comparatively easily followed. In the English version little use has been made of such artifices; the punc tuation is careless, and the headings have not always been closely adhered to—all to the detriment of the intelligibility of the section. Other articles follow on general pathology and treatment, and then comes an important section on metabolism and nutrition. Raudnitz contributes the article on milk, Engel that on the breast and suckling, while Camerer treats of metabolism and feeding during the first year. In discussing artificial feeding he adheres to the view now generally gaining ground, that the indigestibility of casein has in the past been overestimated. He lays more weight than usual on the caloric value of food as a guide to quantity. We do not find any stress laid on the indigestibility of fat, nor reference to Czerny and Keller's theory that over-feeding with milk is a specially fertile cause of malnutrition. On the whole, the methods of artificial feeding advised here are not very different to those in vogue in England. The contents of the second volume cover diseases of the newly-born infant, and general blood and infectious diseases. Knopfelmacher, speaking of birth palsy, dismisses the surgical treatment of Erb's paralysis with a word. Apparently operative measures have not come into vogue in Germany. Undoubtedly one of the weak points of the book is the extent to which English and American work is ignored. With some exceptions, the contributors, on the whole, show comparative ignorance of English pædiatric literature. The subject of blood diseases, entrusted to Japha, is dealt with in an up-to-date and satisfactory manner. Starck contributes an account of scorbutus, and Stöltzner one of rickets; both are sound, reliable articles. Passing over the papers on the exanthemata, we come to Ibrahim's description of acute articular rheumatism. From this we derive the impression that rheumatism, as seen in Germany, differs to some extent from the disease we know here. As we meet with it, the visceral manifestations predominate so much over the joint affection, that the title of Ibrahim's paper sounds to our ears inadequate. In the text the disease is described as an acute polyarthritis in which visceral complications may ensue; there is

nothing to indicate that a child may suffer from the severest rheumatism with scarcely an aching joint. Subcutaneous nodules we have always understood to be rather rare in Germany—still it is a surprise to read that "over forty cases have been reported." It would be easy enough to collect forty or more cases in a year in Edinburgh alone, where the condition is comparatively infrequent as compared with London. Chronic polyarthritis is described under the general heading, chronic articular rheumatism, and is divided into (1) cases complicating acute rheumatism (this apparently including what we know as acute rheumatoid arthritis), and (2) primary chronic arthritis (*Anglicé*, chronic rheumatoid arthritis and Still's disease). It is admitted that the relationship of these diseases is very obscure. Hochsinger's article on congenital syphilis is singularly good, and well worthy of study.

In vol. iii. diseases of the digestive, respiratory and circulatory systems, and thyroid gland are considered. What will probably strike English readers as most novel is the description of the group of diseases with which we are all too familiar, and of which diarrhœa and atrophy are the chief symptoms. Fully to repeat the author's argument would encroach unduly on our space, and it must suffice to say that he (Fischl) follows Czerny in attributing most of these disorders to injuries caused by artificial feeding, particularly with cow's milk and starchy foods. Bacterial contamination, the use of sterilised foods, morbid changes in the bowel, are all found inadequate to explain the nature of these cases. The standpoint taken up will be quite new to most readers, and if one is not disposed to agree in all respects with the new theory, it at least provides matter for thought. In his paper on pyloric stenosis Pfaundler gives credit to Thomson and other English observers for bringing the disease into notice. He draws a clear distinction between hypertrophy of the pylorus and spasm, a matter upon which confusion apparently still exists in some minds. His conservative attitude towards operation will, we fancy, meet with the general approval of those who have studied the disease. In the article upon diseases of the thyroid, descriptions of infantilism, mongolism and achondroplasia are included. The first of these receives but short notice, and the article is practically an uncritical repetition of the views of Brissaud and Hertoghe. The account of mongolism takes no account of all the work which has been done in this country. For some reason this type of imbecility has escaped the notice of German physicians until within quite recent years, and they have still a good deal of leeway to make up in their knowledge of it. The description given here is rather superficial, and the statement that mongols react in a very striking manner to thyroid treatment cannot be supported by our experience in this country.

Vol. iv. is devoted to diseases of the nervous system, urinary organs, and skin. Thiemich's article on functional nervous diseases is par-

ticularly good. We would note as a distinct advance on current teaching the grouping together of the convulsive disorders of infants under the general title of Spasmophilia, with its underlying increased galvanic excitability of the nervous system. A good description of the skin diseases of children brings this elaborate system to a conclusion.

In this review we have selected for comment passages which are of interest from the point of view of English work; of the book in general we must add that, considering the number of collaborators, a very high average level of merit is attained, and that the editing has been most successful in the way of preventing overlapping. The book is profusely illustrated, many of the plates being coloured, and on its pictorial side it reflects the greatest credit on all concerned. It is, therefore, both an important and a useful treatise, and we are sorry that we cannot speak in terms of praise of the English version. Neither translators, editors, nor proof readers have done their parts well. We are not concerned with mere inelegance of phraseology; what we object to is that many passages are unintelligible simply by failing to repeat what the original text says. For instance: "It is now agreed that the cases in question [*i.e.* of pyloric stenosis] show a true pathological change of the stomach wall, and not simply a higher degree of a persistent contracted condition. In order to prove this, two things are necessary; first, that a limited elongation of the pyloric wall does not have this effect. According to all general observations, this condition relaxes the stomachs of all cadavers, even those resembling tumours, which is not the case in the simple systolic stomach" (vol. iii. p. 204). Such a paragraph as this is rather a puzzle; a literal translation is clear enough: "In a given case, a definite opinion that there is not a marked degree of a persistent state of contraction, but a true pathological change in the stomach wall (such as is implied in the expression 'hypertrophic pyloric stenosis') can at present only be formed by ascertaining (1) that a definitely measured amount of stretching of the pyloric wall, such as, according to experience, will relax any systolic stomach however tumour-like it may appear has not this effect." Many comparable examples could be given. As instance of minor errors, which an intelligent proof reader ought to have "queried," we may point to a table on p. 290, vol. iv., rendered quite incomprehensible by the omission of the signs for kathode and anode, and a prescription for syphilis (vol. ii. p. 563) in which the dose of protiodide of mercury is given as from 3 to 5 grains. One cannot absolve the editors from carelessness in passing over mistakes of this kind, and we have, in addition, to protest against their having sanctioned the omission of the really useful bibliographies appended to each chapter in the original. In the possession of marginal rubrics, and in the relegation of minor matters to small print, and in the typography generally, the German edition is far ahead of the English one,

and we regret that those responsible for the production of this English version have not succeeded in accomplishing their task in the workmanlike manner it deserved.

Tuberculosis in Infancy and Childhood: *Its Pathology, Prevention and Treatment.* By Various Writers. Edited by T. N. KELYNACK, M.D., M.R.C.P.(Lond.). Pp. 376. London: Baillière, Tindall & Cox. 1908. Price 12s. 6d. nett.

THE editor of this book points out in his introductory remarks that in the anti-tuberculosis campaign which has been carried on so energetically of late in England, tuberculosis in childhood has received curiously little attention, and yet probably the majority of tuberculous individuals have acquired their infection in early life. The way in which children become infected and how they can be prevented doing so are questions which certainly require further study, and "it is the aim and object of this volume of collective articles on 'Tuberculosis in Infancy and Childhood' to present in convenient and readily accessible form all available facts, theories and suggestions bearing in any way on the problem." The object of the work is praiseworthy, and the way in which it has been carried out reflects credit on the editor and his contributors.

The book consists of 39 articles, not all of equal merit, by 42 writers; and gives in a fairly representative way the different views on the subject at present held. While the various chapters are too numerous to discuss in detail, we may give some idea of the scope of the work by merely mentioning some of the subjects dealt with. Tuberculous disease is described as it occurs in different situations in the body, such as the nose and throat, larynx, ears, cervical glands, lungs, bronchial glands, pleuræ, abdomen, skin, urinary tract, nervous system, eye, spine, and other bones and joints. Its prevalence in various countries, including Scotland, Ireland, France, Germany, Norway, Sweden, Switzerland, New Zealand, America and elsewhere, and among London School children is discussed; also its occurrence in anti-natal life, in orphans, and among the mentally defective. The importance, in its prevention and treatment, of the milk supply, of exercise, of climatic conditions, of medicines, and of tuberculin, is also dealt with. The general subject of its prevention and arrest is considered in a long and interesting chapter by the editor. The list of the authors includes such well-known names as A. D. Blackadder, Calmette (of Lille), J. A. Coutts, Emmett Holt, Robert Jones, Leslie Mackenzie, D. Newman, R. W. Philip, G. A. Wright and many others.

The volume is a useful and interesting one, and has appeared most opportunely. It is well got up, and its value is much enhanced by its excellent indices.

The Care and Nursing of the Insane. By PERCY J. BAILY. Pp. 265. London: The Scientific Press, Ltd. 1908.

THE subject-matter and its arrangement are for the most part excellent, and as "a supplement to the Handbook" might serve a useful purpose in a few isolated instances. But it is greatly to be feared that the book quite overshoots the standard of intelligence among nurses and attendants in asylums. It is written too much in the style in which the author himself thinks, and in places there is a total disregard for the degree of education of those for whom it is avowedly written. It is often quite elaborate in detail, though lucidity, in places, is sacrificed to literary style. A few examples may serve to show:—*Nucleus* is described as "*a differentiated particle;*" "*superimposed upon*" is used for *placed;* "*interstices*" for *spaces;* "exercises considerable pressure" for *presses heavily;* while "dimensions in space" represents the much simpler term *directions.* From the description of "cradles" on page 105 it is more than likely that the non-surgical mind can only picture the familiar article pertaining to the nursery!

Part II.—*Nursing the Sick*—is excellent in matter, though in recommending oil or glycerine for lubricating rubber tubing the author may be unaware of their disadvantages as compared with soap solution; while in saying that the "rectum inclines backwards from the anus" he perpetuates a not uncommon error on an anatomical point which does not require to be raised.

Part III.—*On the Germ Theory of Disease*—is, both on account of its matter and terminology, quite beyond the asylum nurse, and one might readily picture her utter bewilderment when told that "formaldehyde is readily generated by volatilising special tabloids!"

Part IV.—*The Symptoms of Disease and their Observation and Significance*—is complete and very practical, but occasionally marred by the use of highly technical expressions, and it certainly seems fastidious, in taking the temperature, to insist upon "cutting short the hair which grows in the armpit!"

Part V.—*The Mind and its Diseases*—occupies only 20 out of the 265 pages, and starts off with an intricate and not quite relevant dissertation on amnesia. Only 8 pages are devoted to "Insanity," and not a single paragraph exists on mental nursing or the duties of nurses and attendants.

If the book is to serve any useful purpose it must be revised with scrupulous care in choice of words and simple mode of expression, and a special chapter or part be added to justify its title of "The Care and Nursing of the Insane."

Mental Deficiency (*Amentia*). By A. F. Tredgold, L.R.C.P.(Lond.), M.R.C.S.(Eng.). London: Baillière, Tindall & Cox. 1908.

The subject of mental deficiency is one of great interest and importance to the educationalist and sociologist. It is the medical man, however, who is really most concerned with the matter, for these cases are taken to him over and over again, long before they are fit to go to school or come under the notice of the public. A practical book on the subject like this, therefore, deserves a hearty welcome from the medical profession.

Dr. Tredgold gives a thoughtful and interesting account of the various forms and degrees of amentia in all their aspects, and discusses, in turn, their incidence, causation, pathology, classification, mental and physical characteristics, social relationships, diagnosis, prognosis and treatment. The book contains a large number of clinical photographs and many interesting tables and charts.

Although it has long been known that the weak minded constitute quite a considerable proportion of the population, it is only recently, since the appearance of the Report of the Royal Commission of 1904, that there have been data for a reasonably accurate estimate to be formed on the subject. From these it appears that there are probably about 138,529 mentally defective persons in England and Wales, that is, 1 to every 248 of the general population. The condition, therefore, is rather commoner than ordinary insanity.

Far the most important element in the causation of mental defect is, according to Dr. Tredgold, a neurotic heredity. Like most recent writers, he attributes a comparatively small influence to alcohol and tuberculosis. The effect of birth injuries has, he thinks, been much overrated.

The chapter on Pathology is an interesting and important one. It is evidently the result of much original research as well as reading. The classification used is a modification of Dr. Ireland's well-known scheme, though it differs from it in various particulars.

After a consideration of the physical characters of amentia, including a discussion of the significance of the so-called stigmata of degeneration, a long and interesting chapter is devoted to its nervous and mental characteristics. In this the various intellectual processes in the mentally defective are analysed and discussed. The different degrees of mental weakness are then dealt with, ranging from the slighter forms which are within the sphere of the "Special Schools," to the cases of profound idiocy that are incapable of any instruction.

The clinical and pathological features of the different forms of disease of which mental defect is an essential symptom are then described; and such conditions as microcephalus, mongolism, spastic diplegia, chronic hydrocephalus, syphilitic brain disease, infantile

cerebral degeneration, cretinism, &c., are given in detail and illustrated by accounts of cases and portraits of patients.

The relation of the mentally defective to society and their position in the eye of the law are clearly described, and there is a chapter on the Incidence of Insanity in Imbeciles. Two of the best chapters in the book are those on Diagnosis and Prognosis and on Treatment and Training.

Dr. Tredgold's book is admirable in every respect. It is founded on thorough knowledge of its important subject, in its pathological, sociological and clinical aspects; and it imparts the results of his wide experience and knowledge of literature in a clear, sensible and interesting way.

Ophthalmic Surgery. By Josef Meller, First University Assistant, University Eye Clinic, Vienna. Translation reviewed by Walter L. Pyle, M.D., U.S.A. London: Rebman, Ltd. 1908. Price 13s.

Any contribution to ophthalmology from Professor Fuchs's clinic is always welcome. The present volume is a handbook of the surgical operations on the eyeball and its appendages as practised at Professor Fuchs's clinic in Vienna. English-speaking ophthalmologists everywhere must be greatly indebted to Dr. Meller for describing in detail the most important ophthalmic operations as they are practised by his illustrious chief. The work throughout is beautifully illustrated, and is sure to command a place on the bookshelves of every ophthalmic surgeon.

Chapters I., II., and III. deal with the operations for extirpation of the lachrymal sac as practised by Dr. Meller himself, and also with excision of the lachrymal gland. Every step of the operations is fully and carefully described, the complications likely to arise being dealt with, together with the indications for resection of the sac.

Doubtless every ophthalmic surgeon of experience has his own special methods, &c., in operating, and it would be hopeless to expect unanimity in every detail. Exception must be taken, *e.g.* to the graduated method of probing recommended; it is certainly contrary to the practice generally adopted by British surgeons.

Chapters IV. to VII. are devoted to the operations for trichiasis, entropion, ectropion and ptosis. The Jaesche-Arlt operation with transplantation of skin is not in favour, because fresh irritation is said to be set up by the fine lanugo hairs. This is not our experience. Non-pedunculated flaps are not recommended in plastic operations, for reasons with which we entirely agree. Thiersch's grafting, we are surprised to find, is not referred to, although it is a most excellent method. Iodoform dressing

is greatly in vogue in Vienna, and the eye is dressed always on the day following operation, to see that the cornea has not been injured during the operation. Iodoform in the days of "asepsis" is superfluous, and we cannot see how the cornea could be injured in a carefully performed operation such as one invariably sees in this famous clinic. Further, frequent dressings may be injurious, however carefully done, as the graft is in danger of being displaced. With regard to the operations recommended for ptosis, we think it would be advantageous to have included some of the other well-known operations which give equally good results.

In Chapter VIII. the operations for strabismus are described. We take exception to the method of performing the operation of tenotomy, for, in our opinion, it is not the best method available. Enucleation of the eyeball is detailed in Chapter IX. Mules's operation, with implantation of glass ball, is not performed in Fuchs's clinic, because sympathetic inflammation has been observed repeatedly after this operation. This is not the usual experience.

Plastic operations are found fully described in Chapter X.

Chapters XI. to XIV. are devoted to cataract operations. The position of the operator, sitting in front of his patient, must appear awkward to British operators. No speculum is used in cataract extraction nor in iridectomy for glaucoma, the eyelids being held apart by an assistant. With this method there may be some advantage if the operator can depend on his assistant, but it must be remembered that the assistant's fingers may not be aseptic, whereas the speculum can always be made aseptic. We see, moreover, no reason for an assistant at a cataract operation, except perhaps in exceptional cases—the fewer hands the better. The opening of the capsule is always done by means of a capsule forceps, because "after cataract" is said to be less commonly found than when the cystotome is employed. We do not like expression of the lens by pressure through the lower eyelid because of the danger of infection through the openings of the Meibomian glands. A binocular bandage is employed—a method inferior, in our opinion, to the single dressing for psychological and other reasons. Preliminary iridectomy is not recommended, but the combined operation is practised. Excellent rules are laid down for extraction of intra-ocular foreign bodies, and useful information is given with regard to anæsthesia and assistance. As we have already stated, it would be impossible for any surgeon of experience to agree with another's operative technique in every respect, and we therefore refrain from further criticism; nevertheless we have here a most valuable addition to the literature of ophthalmology, and we most heartily recommend its careful perusal to all who practise ophthalmic surgery.

Essentials of Surgery. By ALWYNE T. COMPTON, F.R.C.S. Pp. 428. London: Henry Kimpton. 1908.

THIS is one of the class of books in which the chief object is to condense the essential facts of the larger text-books to a bulk which can be grasped by the student on the eve of an examination. One can often recognise the author who has been chiefly consulted on any given subject, but that is no fault in a book of which originality is not the object. The selection and condensation have been carefully and judiciously carried out, and one has, generally speaking, little fault to find in respect of accuracy of information. The illustrations do not pretend to be more than diagrams, and most of them are quite useful; but we think that some of those representing microscopical appearances might be omitted without loss. The book has been compiled in a way which raises it to a much higher plane than the average "cram" book.

Diseases of the Eye. By STEPHEN MAYOU, F.R.C.S. 119 Illustrations 8 Colour Plates. London: Henry Frowde and Hodder & Stoughton. Price 5s.

THIS is an elementary manual intended to serve as a short and practical guide for students and practitioners. The scope, size and general style of the book appear well suited to the purpose.

The external diseases of the eye are well described and suitably illustrated, most of the illustrations being from original drawings and micro-photographs. The chapter on Elementary Optics and Refraction, pp. 1-64, is not satisfactory: too many of the statements are not quite accurate.

In an appendix the author gives a series of useful prescriptions, and the usual statement of the vision required for the public services.

An Atlas of Skiagrams, Illustrating the Development of the Teeth, with Explanatory Text. By JOHNSON SYMINGTON, M.D., F.R.S., Professor of Anatomy, Queen's College, Belfast, and J. C. RANKIN, M.D., Physician in Charge of the Electrical Department, Royal Victoria Hospital, Belfast. London, New York, Bombay and Calcutta: Longmans, Green & Co., 39 Paternoster Row. 1908. All rights reserved. Price 10s. 6d. nett.

THE negatives of the skiagrams, reproduced in this Atlas, were the subject of a lantern demonstration by Professor Symington at the meeting of the British Dental Association in Belfast last year, and again at the recent meeting of the British Medical Association at Sheffield, and on both occasions the audience expressed keen appreciation of their excellence and their educational value.

It is therefore not to be wondered at that they have been published for the benefit of a wider public, and everyone interested in the subject, especially the dental surgeon, is under a debt of gratitude to the authors for doing so. Having had an opportunity of examining very critically the negatives themselves, the reviewer can testify to the accuracy with which the detail is reproduced; in fact, the plates reflect the highest credit upon the firm which is responsible for them.

There are twelve plates, comprising twenty-three figures, and, to quote from the Introduction, "A practically complete history of the calcification of each tooth, whether temporary or permanent, will be found recorded in the plates of this Atlas." There are also five drawings from dissections of the maxillary sinus at different ages, showing its size, shape, and relationship to the teeth and the neighbouring accessory sinuses of the nose. In addition, a short and accurate description of each plate is given on the opposite page.

This Atlas will be of value to the practitioner who is daily making more and more use of the X-rays in the diagnosis and treatment of abnormal conditions of the teeth and jaws.

The authors and the publishers alike are to be congratulated upon the production of a work which is a welcome addition to medical literature.

Extraction of Teeth. By F. Coleman, L.R.C.P., M.R.C.S., L.D.S. Pp. 158. London: H. K. Lewis. 1908. Price 3s.

In the work of the medical practitioner, at least in the country, the extraction of teeth may play a very considerable part, while he is little concerned with the more conservative side of dental surgery. This book, which deals only with extraction, should therefore be of great value to him, apart altogether from its value to the dentist. Without wasting space on unnecessary physiological details, the author describes the indications for extraction, the general rules, their application to the various teeth, and the forceps employed. He deals with various complications, accidents and sequelæ, along with their treatment, especially that of hæmorrhage. The technique of local analgesia in dentistry is detailed; and the indications for the various forms of general anæsthesia are given, though the actual procedure in inducing general anæsthesia is very properly left to books on that subject. The book is simply and clearly written, and can be fully recommended.

Landmarks and Surface Markings of the Human Body. By Louis Bathe Rawling, Assistant-Surgeon, St. Bartholomew's Hospital. Third Edition. London: H. R. Lewis. 1908. Price 5s.

It would be difficult to estimate the number of men who are indebted to Mr. Rawling for the help he has afforded them in acquiring a know-

ledge of the landmarks and surface markings of the body. This, the third edition of his manual, merits even a greater appreciation than its predecessors, because, while new illustrations have been added, the text has been scrupulously adhered to.

The Edinburgh Stereoscopic Atlas of Obstetrics. Edited by G. F. Barbour Simpson, M.D., F.R.C.P.E., F.R.C.S.E., and Edward Burnet, B.A., M.B., Ch.B. With a Preface by Sir J. Halliday Croom. Section II. Twenty-five Subjects. The Caxton Publishing Co. 1908. Four Sections, 84s.

Part II. of this work deals with a variety of subjects in connection with the Anatomy of the Soft Parts of the Female Pelvis, and with the Anatomy and Physiology of Pregnancy.

The stereograms of the anatomical dissections of the perineum, of the interior of the pelvis, and of the pelvic contents as viewed from behind, are, we think, disappointing, and the student will, we fear, require more than the explanatory text to enable him to fully understand them. He will have no such difficulty with the plates of the dissections of the soft parts at the brim and of the familiar sagittal section of the adult female pelvis and pelvic viscera. These are excellent, and show very clearly the superiority of stereoscopic over ordinary illustration.

The authors have been fortunate in getting an excellent series of specimens of the pregnant uterus at the 3rd week, 2½ month, 3rd month, 4th month and 8th month of pregnancy. In most of these a partial dissection has been made, and the relations of the parts stand out very clearly under the stereoscope. Special reference may be made to the stereogram of the 8th month pregnancy, which shows very beautifully the normal Attitude and Presentation of the fœtus in utero at this period in the R.O.P. Position.

The descriptive letterpress, while of necessity concise, is always clear and accurate, and a great deal of valuable practical information is contained in it. We question, however, if the authors are right in recommending that the conjugate diameter of the brim of the pelvis should be measured by introducing the fingers of the left hand into the vagina. Why not use the right hand? The risk of mistaking some unduly prominent ridge on the sacrum for the promontory itself will, we think, be increased if that hand is not used with which the student is accustomed to make his vaginal examinations.

The authors are to be congratulated on the success with which they have overtaken this—which we consider must be the most difficult section of their atlas—and on the practical interest they have imparted to it.

Diseases of the Skin: An Outline of the Principles and Practice of Dermatology. By Sir MALCOLM MORRIS, K.C.V.O. New and Enlarged Edition. Pp. 686. Cassell & Co. 1908.

MORRIS'S *Diseases of the Skin* has deservedly attained a well-established place among the treatises on cutaneous literature. The imprimatur of public opinion has been unmistakably passed on it, since we have now a fourth edition subsequent to its first appearance fourteen years ago; one enlarged, corrected, and in many ways improved. Outwardly the bright blue binding has been replaced by green, while the paper itself has a faint tinge of the same hue, lessening the glare. In style it is always forcible; the descriptions are clear, the diagnostic points duly accentuated, the treatment suggested rational and cautious—the outcome of a wide experience. Were we to offer criticism on some impressions gained during a perusal, we think that the account of the morbid anatomy of the skin, of the primary and secondary lesions in particular, does not reach the level of the remainder of the book, either in definiteness or in strict accuracy, and in a future edition might be amended and amplified with considerable advantage. Some of the formulæ surely need correction. That for cold cream, on page 60, would result in a thin emulsion, while four grains of chloral hydrate in six ounces of spirits of wine is a very small proportion for a stimulant hair lotion. We cannot agree with the author that the hairs in sycosis are easily pulled out, even when the suppurative process has gone on for some time, or that tinea barbæ is distinguished from sycosis by the pain caused by extraction of the hair, pages 394, 395. In fact, in our experience, extraction of hair is always a painful process in sycosis, while in tinea barbæ the diseased hairs become so loose in the follicle that they can be lifted out. In this way, indeed, the spontaneous cure of tinea barbæ comes about. The black and white illustrations are of varying degrees of merit, and while three-fourths of the coloured are representative, that of pityriasis rubra pilaris is not typical, and that of acanthosis nigricans is indistinct. No doubt in both cases there are supplementary woodcuts. The revision, however, has been carefully and conscientiously carried out, and the contents have been well brought up to date. Thus there is a succinct account of sporotrichosis, and the spirochætæ of syphilis and yaws find adequate recognition. The work is one singularly well adapted to the requirements both of the student and the general practitioner.

Applied Physiology: A Handbook for Students of Medicine. By ROBERT HUTCHISON, M.D., F.R.C.P. Pp. 298. London: Edwin Arnold. 1908. Price 7s. 6d.

FOR some years past the opinion has been growing that some of the physiology taught to medical students is in excess of their require-

ments, and has too often little or no bearing upon the problems which will meet them later on in the study and practice of medicine. In an already crowded curriculum this is a matter of considerable importance, and it is felt that any curtailment of the subject must be at the expense of the more theoretical parts which have no immediate application to medicine. Dr. Hutchison's book is an attempt—the first of its kind—to indicate what physiological facts are thus capable of practical application. It appears, therefore, at an opportune moment, and will be read with great interest, for no one is better qualified than the author to look at the subject both from the point of view of the physiologist and from the side of the clinician. One feels that his treatment of the subject will be impartial and comprehensive.

The author in his preface remarks upon the small size of the volume, necessitated by the paucity of the facts of physiology. The reader will probably be equally surprised at the amount of information the book does contain; it is replete with facts from beginning to end, and were the methods described by which these facts have been arrived at, the volume would take its place bravely among the none too slender text-books of physiology. Such a book might indeed prove the very thing needed for students of medicine. The intentional omission of the applied physiology of the nervous system and special senses is a matter of regret. It is true that the physiology of these is far from complete, but there are many well-established facts that have wide clinical bearings. An adequate treatment of them certainly presents great difficulties, but these are not insuperable, and it is to be hoped that in a subsequent edition these subjects will be included.

The book is especially designed for medical students, but, containing as it does an up-to-date account of facts having practical applications to medicine, it will prove of service to the busy practitioner who has neither time nor opportunities to cull from current literature the more useful advances made in physiology. The material is somewhat condensed in places, and consequently less readily followed by the beginner, but as the volume is intended to act as a companion to, and not as a substitute for, a text-book of physiology, this does not matter so much. The chapter upon Digestion strikes one as particularly useful. The author's opinion is not always clearly expressed; *e.g.* one cannot gather from the text whether the arrangement of food as at dinner—meats first, carbohydrates last—or as in the American breakfast—cereals first, meat last—is being recommended as physiologically correct.

All parts of the book bear evidence of careful preparation and of an extensive knowledge of physiological literature by the author. Such a work has long been needed, and is very welcome at the present juncture.

Military Hygiene: A Manual of Sanitation for Soldiers. By Lieut. Colonel R. H. Firth, R.A.M.C. London: J. & A. Churchill. 1908. Price 2s. 6d..

This little manual, written in plain lucid terms, is intended for the instruction of officers and men of the army on the general principles for the preservation of health. Technical terms have been avoided as much as possible, and the subject rendered easily comprehensible.

Under Army Order 3 of 1908, sanitation is made a compulsory subject for promotion to the rank of captain, and the book will be in the hands of every subaltern in the service. We may therefore hope that the commanding officer of the future will have a serviceable knowledge of the laws governing preventable sickness, and be anxious to assist the sanitary officer in his efforts to render the army more efficient by the prevention of disease.

We congratulate Colonel Firth on the production of a sound practical work which may be read with profit by officers and men alike, and should find a place in every mess and regimental library in the service.

Fads and Feeding. By C. Stanford Read, M.B.(Lond.), &c. Pp. 163. London: Methuen & Co.

Dr. Read has had "the general reader" in view in the composition of this little book. He is strong on bringing common-sense to bear on the question of diet, and he puts his points in plain language. He is prepared to accept Chittenden's results as to the amount of proteid allowable. It is many years since Lauder Brunton tried to show that an ordinary English dinner of many courses was physiologically correct in the order of the various kinds of food, and Dr. Read has a similar commentary, but it is surely a little fanciful to say that the fish comes before the joint "in order to prepare the stomach for harder work to come." In the sixteen chapters a large field is traversed, and we have such headings as Vegetarianism, "Non-Uric Acid" Diet, Fletcherism, and Other Dietetic Fads. The chapter on Alcohol presents a case very strongly adverse to its prevalent mode of consumption. Altogether the book is one which may be safely commended to patients seeking guidance in matters dietetic.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The Professor of Surgery. We regret to learn that Mr. Chiene has been compelled by the state of his health to ask the authorities to make arrangements for the discharge of his duties in the meantime. Accordingly, it has been arranged that Mr. Wallace will conduct the class of Systematic Surgery for the remainder of the session, while Mr. Alexis Thomson will take charge of Mr. Chiene's wards, and act as University Lecturer on Clinical Surgery.

We are, we are sure, only expressing the universal wish when we hope that a prolonged holiday will greatly benefit Mr. Chiene's health and render him able to discharge the duties of his Chair.

Unqualified Practice. We are rather surprised that so little notice has been taken of the recent action of the General Medical Council in this matter.

In November 1907 the Council appointed a committee "to ascertain what legal provisions exist in the colonies and dependencies of the Empire, and in foreign countries, for the prevention of medical practice by other than legally qualified persons, and to consider what steps should be taken to procure effective legislation for the same purpose in the United Kingdom of Great Britain and Ireland."

At the request of the Council the Lord President of the Privy Council kindly gave directions for the collection of all available information through the official channels, and this was carefully sifted and tabulated. After consideration of the report of the Committee on the mass of information which was thus provided, the Council *unanimously* agreed:—

"That the General Medical Council being of opinion that the present *Medical Acts* do not sufficiently enable 'persons requiring medical aid' to 'distinguish qualified from unqualified practitioners' (the words in commas are from the preamble of the existing Act), and that it is contrary to the interest of the public that medical and surgical practice should be carried on with impunity by persons holding no recognised qualifications, request the Government to take steps for the appointment of a Royal Commission to inquire into the evil effects produced by the unrestricted practice of medicine and surgery by unqualified persons."

It is, we think, pretty generally agreed that something of the nature of a Commission which will demonstrate to the public the exist-

ing evils is a necessary preliminary to any legislation, and those who are confident of their case never fear enquiry.

Patent Medicines.

THE more old-fashioned among us are accustomed to look upon some of the legislative enactments of New Zealand with a sort of holy horror. Votes for women, labour regulations, an old age pension scheme beside which that just introduced in this country sinks into insignificance, and other advanced schemes are too strong food for our enfeebled stomachs. But the medical profession will be unanimous in its approval of the Quackery Prevention Act, which came into force on January 1 of this year.

The most drastic provisions are as follows :—

"2. Every person commits an offence who publishes or causes to be published any statement which is intended by the defendant or other person to promote the sale of any article as a medicine, preparation, or appliance for the prevention, alleviation, or cure of any human ailment or physical defect, and which is false in any material particular relating to the ingredients, composition, structure, nature, or operation of that article, or to the effects which have followed or may follow the use thereof. . . .

"4. Every person who commits an offence against this Act is liable on summary conviction before a magistrate to a fine not exceeding £100 in the case of a first conviction for any such offence, and not exceeding £200 in the case of a second or any subsequent conviction.

"5. If any person causes any statement to be inserted in breach of this Act in a newspaper printed and published in New Zealand, the printer, publisher, and proprietor of that newspaper shall severally (and without excluding the liability of any other person) be deemed to have published that statement in breach of this Act, and shall be liable for an offence against this Act accordingly."

Whatever our Legislature may do in the future in the matter of unqualified practice, and it is worthy of note that after this year it will be illegal for anyone to practise one branch of it (midwifery) for gain unless registered under the Medical or the Midwives Act, there cannot, we think, be any conflict of opinion among educated, disinterested persons about the harm done by the indiscriminate consumption of patent medicines, and anything which tends to diminish this must work for good.

It is not a question of protection for the medical profession ; if a balance were struck, we are not sure that, in a sordid sense, the profession may not even benefit by the harm done, and we are perfectly certain that the New Zealand Legislature, which is by no means distinguished for any tenderness in its dealings with our profession, had nothing in its mind but the welfare of the community.

The subject is very trenchantly dealt with from that aspect by Mr. Labouchere in *Truth* of 20th January, and we commend that article to the attention of our readers.

The Registration of Nurses.

PROBABLY not even its most sanguine supporters expected the Bill for this object to pass last session, but it seems by no means unlikely that it will come up for serious consideration shortly. Meetings of those interested have been held in Scotland recently, and we gather that it is the general opinion that Scotland should be dealt with in a separate Bill. Feeling on the subject does not run so high as south of the Tweed, nor is opinion so sharply divided, possibly because we have not in this country so many well-intentioned ladies with abundant leisure on their hands.

Some little time ago there emanated from that astute body—the Local Government Board for Scotland — a memorandum regarding the training of nurses, which really contained all, or almost all, the essentials of a registration scheme. No one proposes to interfere with any woman acting in her proper capacity as "a ministering angel," but it is only right that untrained women should not masquerade as thoroughly trained nurses, and thus deceive both the patient and the medical man under whom they work.

Milk Supply.

EXAMPLE is better than precept. It is all very well to theorise about a pure milk supply and its importance; a friend of ours, a director of a large dairy company, not in Edinburgh, once told us that his company had been endeavouring to push the trade in bottled milk, but that they did not have one single medical man on their list of customers for milk in that form.

The Liverpool Medical Institution has taken up the question of the purity of milk supply from the hospital aspect, and has just issued an exceedingly interesting and suggestive report.

The committee responsible for the drawing up of the report was small and representative, and included the Professors of Pathology, Public Health and Toxicology, as well as physicians to the chief Liverpool hospitals.

With one exception all the Liverpool hospitals get their milk from the country, and the committee conclude that it is abundantly clear that the milk supplied is not of the high standard desirable in the case of food for invalids.

Five per cent. of the specimens were so deficient that legal proceedings were taken. On bacteriological examination 5·4 per cent. contained tubercle bacilli, while 72 per cent. contained organisms commonly present in the excreta of cattle.

The committee suggest the following conditions:—

1. Systematic inspection of the farm is essential.
2. Periodical analysis of the milk for fats, solids and adulteration.
3. Bacteriological examination at intervals for the usual infective organisms, more especially tubercle, and for other bacterial contamination.
4. Periodical application of the tuberculin test.

5. The farm and accessories to be properly equipped and kept up to an approved standard of hygienic efficiency.

6. The use of special milk cans—"or churns"—for transport, of convenient size, rain and dust proof, and capable of being readily sealed. These to be registered, numbered and stamped on the outside with the tare weight.

But it is not enough to lay down conditions, these must be fulfilled, and human nature being the same in Liverpool as elsewhere, the committee suggest that there should be a permanent staff consisting of persons qualified to conduct chemical and bacteriological analysis, and a veterinary surgeon who shall apply the tuberculin test once in three months, and inspect each farm and all the cows at least once a month.

These suggestions apply only to the milk supply of the hospitals. We are convinced of this, that if medical men all over the country would show by their example how importantly they regard the necessity of pure milk we would sooner reach a high standard than by means of legislation, however stringent.

The British Medical Library Association.

At a meeting of those interested in medical libraries, held at Leeds on Saturday, 9th January, it was decided unanimously to form an Association of Medical Libraries, and a provisional committee was appointed to draw up the constitution and rules. Professor Osler (Oxford) was invited to become the first President, and Professor Walker Hall (Bristol) and Mr. Cuthbert E. A. Clayton (Librarian, Manchester Medical Society) were asked to undertake the duties of temporary secretaries.

The following are some of the objects of the Association :—

1. Intercourse of those interested in medical library work and the discussion of matters associated with the fostering and care of libraries.

2. Diffusion of information as to the branches of medical literature specially catered for at different centres, and as to the value of the various books and new periodicals which are issued from time to time.

3. The promotion of measures whereby a larger number of practitioners in each centre may be induced to utilise the library facilities of each district.

4. The consideration of matters connected with the present rapid increase of periodicals, publication of books, &c.

5. The opening up of better chances of advancement for library assistants. By such means there would be an inducement to parents to put their sons to such an occupation, and the librarians would be able to have better material for training.

6. The exchange of duplicate books and periodicals.

When the Association is in working order it is hoped that a certain number of the libraries interested will join together to form a circle for the loan of their research and other literature.

The Morison Lectures. The Morison Lectures of the Royal College of Physicians were delivered in the Hall of the College during the last week of January by Dr. F. W. Mott of Charing Cross Hospital, who took for his subject—"Syphilis of the Nervous System in the Light of Modern Research." The lectures were much appreciated by large and interested audiences. We hope to publish an abstract of them next month.

Mr. George Berry has been appointed to succeed Dr. Argyll Robertson as Honorary Surgeon to the King in Scotland.

MEDICINE AMONG THE ASSYRIANS AND EGYPTIANS IN 1500 B.C.

Introductory Lecture upon the History of Medicine.

By JOHN D. COMRIE, M.A., B.Sc., M.B., F.R.C.P.Ed.,
Lecturer on the History of Medicine, University of Edinburgh; Assistant Pathologist, Royal Infirmary of Edinburgh.

If one asks where the beginnings of the healing art may be sought, one must look, so far as Western Medicine is concerned, to those nations that inhabited the valleys of the Euphrates and of the Nile, long before the people of Britain had reached even that state of gentle savagery in which the Romans found them, and which Macaulay describes as akin to the modern condition of the Sandwich Islanders.

When we turn to the fertile plains north of the Persian Gulf, we find that the origin of Assyrian Medicine is lost in a remote antiquity, and when we first become acquainted with it, we discover it mixed to a great extent with magic. I use the term Assyria here in a generic sense, to indicate those lands inhabited by peoples of Semitic race who contended for many centuries with one another for the plains of the Euphrates and the Tigris, and who strove for mutual annihilation with a determined ferocity before which to-day we stand appalled. Long before the twentieth century B.C., a Tartar or Scythian people with dolicho-cephalic skulls, who had previously inhabited the country from the Caucasus to the Indian Ocean, and from the Mediterranean to the mouth of the Ganges, were retreating before the waves of a Semitic race whose various tribes spread northwards from Chaldea. This Scythian people is still preserved throughout the central part of Asia and in corners of Europe, among the Lapps, Finns and Hungarians. Their Semitic supplanters founded the kingdoms of Babylon about 3000 B.C. or earlier, that of Assyria,

about 1000 years later, spread with Abraham and his followers to Palestine, and migrated to colonies in Phœnicia, Carthage, Sicily, Spain and Western Africa.

There are many evidences that the healing art among these peoples was one of usefulness, honour and profit. One of the most important results of explorations in Assyria has been the discovery in the palace of Assur-bani-pal (668-626 B.C.), at Nineveh, of a large library, consisting of many thousand tablets of baked clay, inscribed with cuneiform characters and now preserved in the British Museum. This library probably owes its origin to the keen political insight of Esar-haddon (681-668 B.C.), father of Assur-bani-pal and conqueror of Egypt, who desired to prevent the youth of Assyria from going to be taught at Babylon or Borsippa, where they would be subjected to dangerous political influences. Careful study has made it evident that many of the tablets in this library are copied from ancient originals in the temple libraries of Chaldea, each being stated to be "like its old copy" or "like the ancient tablets of Sumir and Akkad." Many of these tablets have been found duplicated in the libraries of other Babylonian cities, and thus the original composition must be referred to a much earlier date.

Nineveh, after maintaining an independent existence as the capital of Assyria from about 2000 years B.C. was totally destroyed when Assyria became a Median province in 606 B.C., and has remained a ruin from then till the present day. Xenophon, passing it in the Retreat of the Ten Thousand, mentions the desolate vastness of the ruined city with walls 150 feet in height.[1]

At the period with which I intend principally to deal so far as Egypt is concerned (1500 B.C.), and all through the subsequent history of Assyria, there was much intercourse between these countries and a regular trade route with letter-posts ran from Memphis by way of Palestine and Carchemish to Nineveh. The diplomatic language in which the letters were written was that inscribed by cuneiform characters impressed with a three-cornered stylus upon clay tablets as in these tablets found at Tel el-Amarna.

The library of Assur-bani-pal found at Nineveh contained text-books on geography, mathematics and natural history, together with poems and records of kings; and we may judge of the important position occupied by the healing art from the fact that out of the total 20,000 tablets between 500 and 1000 are stated by Oefele to consist of medical works.[2]

[1] Xenophon, *Anabasis*, iii., iv., § 10.

[2] *Keilschriftmedizin; Abhandlungen zur Geschichte der Medizin*, von Felix Freiherrn von Oefele, Breslau, 1902, p. 19.

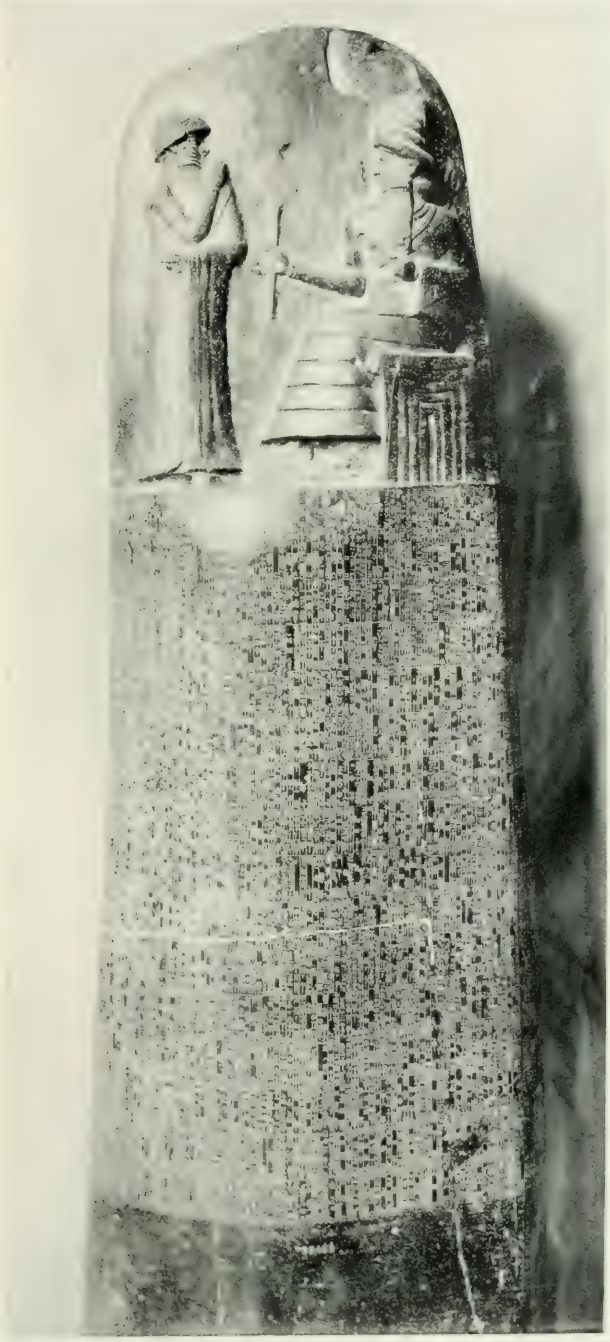


Photo Mansell.

I. The Code of Hammurabi (2200 B.C.).

The following are a few prescriptions taken from the German translation by Küchler of these tablets.[1] They are merely fragments left by the Babylonian sackers of Nineveh and there is the same difficulty in translating technical words that is found with regard to papyri recording the medicine of Egypt. Between the two there is a strong family resemblance.

I. 11-16, page 3:—

"If a man is ill with colic, thou shalt have him placed upon his feet; pour upon him decoction of hypericum; so will he recover.

"Or in the same case, let him kneel down and crouch upon his heels, and thou shalt let cold water run upon his head.

"Or in the same case if there be faintness, thou shalt lay his head below and raise his feet. Beat upon his buttocks, and say, 'May it be well.' With thy thumb strike fourteen times upon his head, and upon the ground."

Many of the prescriptions are intended for the relief of what must have been a common complaint at Nineveh, the results of over-indulgence in food and drink.

I. 14, page 43:—

"When a man is bilious, thou shalt rub down onion; he shall drink it in water without eating."

The following is a prognostic point in jaundice:—

III. 4-5, page 55:—

"If a man is sick with jaundiced eye, and the disease mounts to the interior of the eye so that the water from his eyes is green like copper, his inner parts rise up and he brings back meat and wine, the disease dries up his whole body, so will he die."

Among the easily identified substances prescribed in these cuneiform tablets are sesame, olive and castor oils, syrup of dates, honey and salt; fasting was very commonly ordered; while the use of massage and of enemata appears to have been known.

Borsippa, a suburb of Babylon, where another library had been established in the temple of Nebo, was, as we learn from Strabo, the seat of a university which had attained great celebrity. From a fragment of a Babylonian medical work, now in the British Museum, Professor Sayce states: "We may perhaps infer that it was chiefly celebrated as a school of medicine."[2]

[1] *Beiträge zur Kenntniss der Assyrisch-Babylonischen Medizin*, von Friedrich Küchler, Leipzig, 1904.

[2] *Babylonians and Assyrians*, by A. H. Sayce, M.A., 1900, p. 54.

In Babylon the physician is mentioned at a very early date. Thus we hear of Ilu-bani, the physician of Gudea and High Priest of Lagas, at a period about 2700 B.C.[1]

In the Code of Laws promulgated by Hammurabi, a king of the First Dynasty of Babylon, dating from *c.* 2000 B.C., we find that not only is the doctor mentioned, but his remuneration is fixed by law. I shall read a few clauses bearing on this profession from the translation by the Rev. C. H. W. Johns :—[2]

"215. If a doctor has treated a gentleman for a severe wound with a bronze lancet, and has cured the man, or has opened an abscess of the eye for a gentleman with the bronze lancet, and has cured the eye of the gentleman, he shall take ten shekels of silver.

"216. If he (the patient) be the son of a poor man he shall take five shekels of silver.

"217. If he be a gentleman's servant the master of the servant shall give two shekels of silver to the doctor.

"218. If the doctor has treated a gentleman for a severe wound with a lancet of bronze, and has caused the gentleman to die, or has opened an abscess of the eye for a gentleman with the bronze lancet, and has caused the loss of the gentleman's eye, one shall cut off his hands.

"219. If a doctor has treated the severe wound of a slave of a poor man with a bronze lancet, and has caused his death, he shall render slave for slave.

"220. If he has opened his abscess with a bronze lancet, and has made him lose his eye, he shall pay money, half his price.

"221. If a doctor has cured the shattered limb of a gentleman, or has cured the diseased bowel, the patient shall give five shekels of silver to the doctor.

"222. If it is the son of a poor man, he shall give three shekels of silver.

"223. If a gentleman's servant, the master of the slave shall give two shekels of silver to the doctor."

These laws are interesting as indicating the definite social position enjoyed by the medical profession at this early period. The remuneration is good, considering the much greater purchasing power in those days, the shekel being practically equivalent to half a crown. We may note, in passing, that the physician was a man of substance, and the possessor of slaves. The reference to

[1] *Babylonians and Assyrians*, by A. H. Sayce, M.A., 1900, p. 162.

[2] *The Oldest Code of Laws in the World*, translated by C. H. W. Johns, M.A. Edinburgh, 1905.

treating the abscesses with a bronze lancet is of extreme interest. I have corresponded with the Rev. C. H. W. Johns, of Queen's College, Cambridge, the translator of this Code, regarding the significance of this word abscess. He tells me that the word "nagabtu," meaning "hollow" or "well," connected etymologically with "nagabu," had been taken by him to be metaphorically applied to a "running sore." Now it is unlikely that any abscess of the eyeball would be treated by a practitioner with a lancet, or that the destruction of the eye would be punished, under a reasonable code of laws, in so severe a manner; for an abscess in the eyeball destroys the sight and appearance of the eye before any treatment is called for. An abscess in the orbit, on the other hand, such as might be caused by an arrow or other missile, would of itself be a trivial matter, not requiring operative treatment, and not liable to cause destruction of the ball. Therefore the rarity of treatment required by either of these conditions would render it unlikely that they should be mentioned in a concise code. I have suggested to Mr. Johns that this may possibly be a reference to a primitive operation for cataract.[1] It is well known that in India, not many years ago, the criminal authorities experienced much difficulty in dealing with the native operators for this condition. These men would arrive at a village, operate upon the persons there afflicted with cataract, and, by couching or depressing the lens, restore the lost vision in some degree, to the delight of the patients and of their friends. Then, collecting the fees, they would move off, while the eyes in a few days suppurated and were totally destroyed, It is likely that the penalties of Hammurabi are directed against unscrupulous practice of this sort. We know that the operation of "couching" a cataractous lens is a common one among primitive peoples, the lens being simply depressed to the lower part of the vitreous humour by means of a needle pushed in outside the margin of the cornea. The Assyrian, also, as we know, could have fitted patients thus operated upon with the necessary spectacles, for they were acquainted with the principles of optics, and Layard discovered a lens among the ruins of Nineveh.

[1] The learned translator of the Code kindly writes to me as follows:—"I certainly think that the balance of probability is in favour of cataract, . . . and I think you can fairly say: 'Taking into consideration the present state of lexicography, and having regard to the possible pathological circumstances, the probability is that it was an operation for cataract, but it is difficult to see exactly what phase of the operation is expressed by the words, "open the nagabtu."'" I find also that Baron von Oefele holds the view that a cataract operation was performed by these people. See his *Keilschriftmedizin in Parallelen*, Leipzig, 1904, p. 21.

At the head of the profession in Babylon stood the Rab-mag or Court physician, and under him numerous other doctors are mentioned in the records of Babylon, Nineveh and Tel-el-Amarna. The following translation of a letter from a certain Arad-nana, who seems to have been a consulting physician to Esar-haddon (700 B.C.), is interesting:—[1]

"As regards the patient who had bled through the nose, the Rab-mag reports:—'Yesterday, toward evening, there was a good deal of hæmorrhage; the dressings have not been properly applied. They have been placed outside the nostrils, oppressing the breathing and coming off when there is hæmorrhage. Let them be put inside the nostrils, and then the air will be excluded and the hæmorrhage stopped. If it is agreeable to my lord the King, I will come to-morrow and give instructions; meantime let me know how the patient is.'" So much for medical etiquette in Assyria! Three other letters from Arad-nana are also extant.

Apart from the physicians, we learn from Herodotus that it was a common custom at Babylon to lay the sick in the public square, so that passers-by who had suffered from similar complaints might give them advice as to remedies that had proved beneficial in their own case.[2]

If we turn to early Greek literature we find that in the *Iliad* and *Odyssey*, composed somewhere about 1000 B.C., and referring to events of some centuries previous (about 1200 B.C.), there are references to the physicians of Egypt; for example, when Telemachus comes to visit Menelaus: "Helen, daughter of Zeus, turned to new thoughts. Presently she cast a drug into the wine whereof they drank, a drug to lull all pain and anger and bring forgetfulness of every sorrow. Whoso should drink a draught thereof, when it is mingled in the bowl, on that day he would let no tear fall down his cheeks, not though his mother and his father died, not though men slew his brother or dear son with the sword before his face and his own eyes beheld it. Medicines of such a virtue and so helpful had the daughter of Zeus, which Polydamna, the wife of Thon, had given her, a woman of Egypt, where earth, the grain-giver, yields herbs in greatest plenty, many that are healing in the cup and many baneful. There each man is a leech, skilled beyond all human kind; yea, for they are of the race of Paeëon."[3]

[1] *Babylonians and Assyrians*, by Rev. A. H. Sayce, M.A., p. 218.
[2] Herodotus, i. 197.
[3] *Odyssey*, iv. 229 f.

The following brief chronological table is based upon Breasted (*History of the Ancient Egyptians*, London, 1908), and agrees with Meyer's *Ägyptische Chronologie*. This system of dates has been followed in the present article:—

First Dynasty from . . .	3400 B.C.
Khufu builds Great Pyramid . .	2900 „
Fifth Dynasty from . . .	2700 „
Eleventh Dynasty from . .	2160 „
Eighteenth Dynasty (New Empire) from	1580 „
Exodus of Israel (?) . . .	1209 „
Herodotus born . . .	484 „

The Egyptians apparently set great store by the medical profession. The practitioners of this art belonged to the priestly class, though they were not priests, and they seem to have been not only men of high social standing, but men of wealth and substance, who were regarded as devotees of Thoth, the scribe of the gods and prototype of Hermes. This is indicated both by the monuments that have been erected to some of them, and by the elegant papyri they possessed. That they occupied a position of great respect and influence is proved by numerous references.

I-em-hotep was probably a distinguished physician who flourished before the end of the Third Dynasty (3000 B.C.); his name signifies "he who cometh in peace," and as the Egyptian tended to deify any historic character of a beneficent nature and to convert to a demon any unpopular personality, so at the period with which I propose chiefly to deal (1500 B.C.) his worship had become popular and fashionable at Memphis; and under the Ptolemies a small temple was built in his honour upon the island of Philae. He was the god who sent sleep to those in pain; those afflicted with disease formed his special charge; he was the good physician both of gods and men; and he healed their bodies during life and superintended the arrangements for their preservation after death. The Greeks, who called him Ἰμούθης, identified him to some extent with Asklepios and gave his temple at Memphis the name τὸ Ἀσκληπίειον.[1]

Nenekhsekhmel was chief physician to one of the kings of the Fifth Dynasty (B.C. 2700). His tomb at Sakkarah bears an inscription recording the favour shown by Pharaoh to him for his services,

[1] *The Gods of the Egyptians*, by E. A. Wallis Budge, M.A., vol. i. p. 522.

and a portrait, from the robes and adornments of which his high social standing may be gathered.[1]

So much were the services of Egyptian physicians prized that they were found in various foreign courts. Herodotus tells us that an Egyptian eye doctor at the Court of Cambyses, king of Persia, who bore a grudge against Amasis, king of Egypt, enjoyed so much influence with the Persian king that he successfully incited Cambyses to attack Egypt and thus led to the conquest of this country by the Persians.[2]

Cyrus (the Great)—*circa* 530 B.C.—as we are told by Xenophon, "collected round him the very best physicians, and whatever instruments, medicines, meats or drinks any one of them told him would be of use, there was not one of them he did not provide for himself and treasure up. And when any of those of whom it was proper for him to take care fell ill, he went to see them and furnished them with whatever they wanted, and was thankful to the physicians whenever they wrought a cure on anyone, and took the things with which they effected it from his store."[3] These were undoubtedly Egyptians and Greeks.

We may, therefore, conclude that in the early days of Egypt the medical practitioners belonged to a learned class, enjoyed a high social position, and were in many cases the friends and councillors of kings. More than this, we may, I think, assume that they laboured, and laboured successfully, to alleviate human misery and to soothe human suffering.

We must remember that, though their knowledge of the healing art was a purely empiric one, and though they were entirely ignorant of the principles of physiology and even of the simplest systematic anatomy, yet their use of these remedies was the fruit of the experience of many centuries; and their knowledge of pathology, derived from the constant examination of the bodies of those who died, must have conferred upon them great skill in diagnosis. Upon this point all the testimony of antiquity accords.

The record of this knowledge has come down to us in part through various papyri. We know from the statement of Clement

[1] *Medical History from the Earliest Times*, by E. T. Withington; also *Life in Ancient Egypt*, by Adolf Erman, translated by H. M. Tirard, 1894, p. 319. For the inscription, see *Ancient Records of Egypt*, by J. H. Breasted, Ph.D., 1906, vol. i. p. 108.

[2] Herodotus, iii. 1.

[3] Xenophon, *Cyropædia*, bk. viii., ch. 2, 24, 25.

of Alexandria[1] that the sacred books of Thoth, preserved in the temples and known as the Hermetic Books, were forty-two in number, of which thirty-six dealt with philosophy and six with medicine. The names of the latter were:—

(1) On the constitution of the body.
(2) On disease.
(3) On instruments.
(4) On drugs.
(5) On the eye.
(6) On (diseases of) women.

These Hermetic Books, which were carried by pastophori, or priest physicians, in the sacred processions, have unfortunately all been lost: but we know a great deal regarding the actual methods of the physician from some medical papyri which have come down to us.

Of these the chief are:—

1. The Papyrus Ebers, preserved at Leipzig, discovered by Professor Ebers in Egypt in 1872. It dates from about 1500 B.C., and consists of 110 pages.

2. The Berlin Medical Papyrus, published by Dr. Brugsch. It dates from about 1300 B.C., and contains 21 pages. There is also a smaller one in the Berlin Museum, of 15 pages.

3. The Kahun Papyrus, published by F. L. Griffith. It dates from about 2000 B.C., but is a short papyrus, consisting of only 3 pages.

4. The Hearst Medical Papyrus, preserved in the University of California, and published by Dr. George A. Reisner. It consists of 17 pages.

5. The British Museum Medical Papyrus. It has not yet been published, but Dr. Wallis Budge, keeper of the Egyptian and Assyrian antiquities in the British Museum, tells me he hopes it will shortly be issued by the trustees of this institution. It dates, probably, from about 1000 B.C.

6. There are also papyri of medico-magical contents in the museums at Leyden, Turin, Cairo and Paris, but these are said

[1] Clement of Alexandria, *Stromata*, vi. 634. *δύο μὲν οὖν καὶ τεσσαράκοντα πᾶσιν ἀναγκαῖαι τῷ Ἑρμῇ γεγόνασι βίβλοι· ὧν τὰς μὲν λς τῶν πᾶσαν Αἰγυπτίων περιεχούσας φιλοσοφίαν, οἱ προειρημεθύοι ἐκμανθάνουσι· τὰς δὲ λοιπὰς ἓξ οἱ παστοφόροι, ἰατρικὰς οὔσας, περὶ τε τῆς τοῦ σώματος κατασκευῆς, καὶ περὶ νόσων, καὶ περὶ ὀργάνων καὶ φαρμάκων, καὶ περὶ ὀφθαλμοῦ, καὶ τὸ τελευταῖον περὶ τῶν γυναίκων.*

to be of little value as regards our knowledge of Egyptian medicine.[1]

My remarks regarding medical practice in Egypt, except when otherwise mentioned, refer to the period of the 18th Dynasty, that is the 16th century B.C. At this time, known as the beginning of the New Empire, Egypt stood at the zenith of her glory. Her Pharaohs exacted tribute, and her armies marched unhindered from the Libyan desert to the Euphrates, and in this state of external peace and domestic felicity there was opportunity for intercourse with outside nations, *e.g.* the dwellers in Greece and Crete, for great advance in the technical arts, and for sending forth exploring expeditions which brought back treasure and strange animals from the sacred land of Punt at the sources of the Nile.

This period is to be placed two centuries and a half before that epoch familiar to us for the Exodus of Israel from Egypt. To it belong some of the chief literary and monumental remains of this country, and during it the Egyptians attained to a level of thought and of executive skill which they did not at any time surpass, save under Greek influence in the Ptolemaic period, more than a thousand years later. I show you here some small fragments from the wreck of this great civilisation.

An alabaster mortar for bruising drugs, and a bronze basin which may have been used for storing roots or herbs were shown here as examples of the vessels of the period. These and also several predynastic vessels of polished stone were kindly lent for demonstration by Mr. D. C. Robertson.

Surgical Knives and Spatula.

These knives were purchased by Mr. D. C. Robertson near Thebes in 1890, and were by him presented to Dr. Affleck, who has kindly lent them to me. Professor Sayce, who was present when they were bought, unhesitatingly pronounced them to belong to this period. They were found in a tomb of the 18th dynasty (*circa* 1500 B.C.). I have submitted them also to Dr. Wallis Budge, and he, while admitting that they possibly belong to this

[1] For numerous interesting comments upon several of these papyri, see a series of articles in the *British Medical Journal*, 8th April, 13th and 20th May, 1893, by James Finlayson, M.D. See also the introduction to Joachim's German translation of the *Papyros Ebers*. Also *Recueil des Monuments égyptiens*, par Henri Brugsch, deuxième partie, Leipzig, 1863 (for the Berlin Papyrus). Also *Hieratic Papyri from Kahun and Gurob*, by F. L. Griffith, London, 1898 (for the Kahun Papyrus). Also *The Hearst Medical Papyrus*, University of California Publications, vol. i.

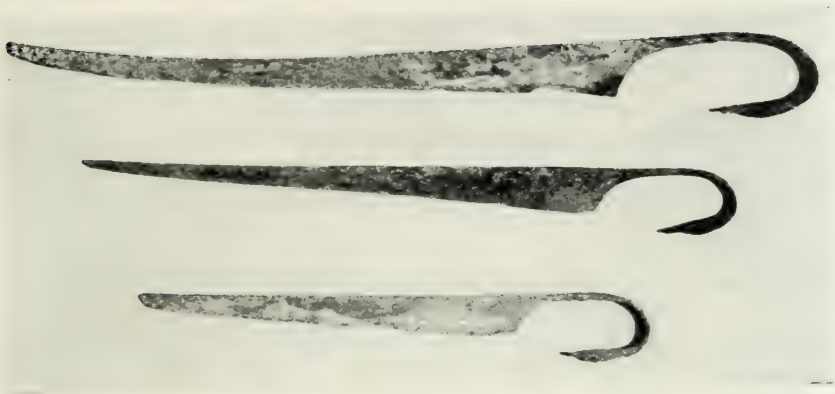


Photo J. D. C.]

II.—Bronze Knives of the Eighteenth Dynasty (1500 B.C.), supposed to be surgical.

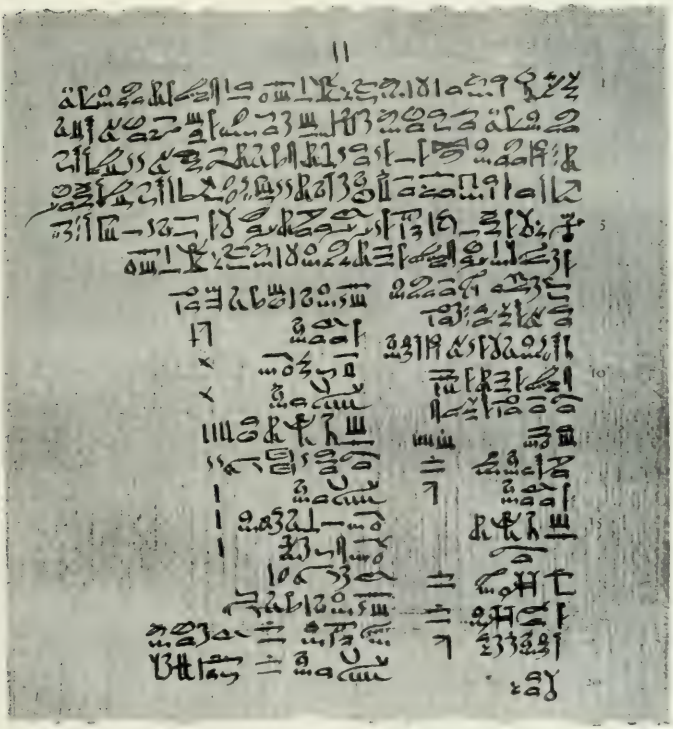


Photo J. D. C.]

III.—Prescriptions on second page of Papyrus Ebers (1550 B.C.).

period, is inclined to think that the shape indicates a later date. One finds in the papyrus of Ani[1] (1500-1400 B.C.) a picture of Ra, incarnated as a cat, amputating the head of the Serpent of Darkness with a knife, in shape very closely resembling the largest of these three. Probably, therefore, the difficulty with regard to shape need not weigh too much in the estimation of their date. As to their use, the Arab from whom Mr. Robertson purchased them stated that they were found in an amphora along with other instruments, which he showed to Mr. Robertson. That gentleman tells me these resembled surgical or obstetric forceps, although, unfortunately, he did not purchase them. The knives are well adapted for the performance of those operations which were carried out by the Egyptian physicians of this period, and to which I shall refer later. They could not have been concerned with the process of embalming or with that of sacrifice, for which flint knives were always used, in accordance with ancient custom.[2] I think for these various reasons we may safely conclude that they were intended for surgical use.

Copper Chisels

are of special interest, because they indicate a lost art. They consist of pure copper, containing a little native arsenic; but they have been hardened by some forgotten process, so that they were capable of being used for cutting those beautiful hieroglyphics in hard granite that have withstood the tooth of time for thousands of years.[3] Professor Sayce has showed me in his collection several chisels of which the head presents the dints of hammering, while the edge is perfect and unturned.

A Facsimile of the Ebers Papyrus.

The date of the compilation of this is assigned by Professor Ebers to the time between 1553 and 1550 B.C., from a calendar on the back of one of the pages.

The Egyptians, who held the sacredness of the human body an essential part of their religion, were a most cleanly people. Their dress, at this period, consisted of a simple white linen stole or stole and kilt, the head and legs were bare, and the feet shod simply

[1] *The Book of the Dead: The Papyrus of Ani*, published by the British Museum, plate 10, chapter xvii.

[2] Herodotus, ii. 86. See also *Burial Customs of Ancient Egypt*, by John Garstang, M.A., F.S.A., 1907, pp. 106, 107.

[3] See *A History of Egypt*, by J. H. Breasted, 1906, p. 93.

with light sandals. Their ablutions were frequent, and Herodotus,[1] describing the customs of a somewhat later date, states that "for three successive days in each month, they purge the body by means of emetics and clysters, which is done out of a regard for their health, since they have a persuasion that every disease to which men are liable is occasioned by the substances whereon they feed." According to Pliny[2] the habit of taking enemata was a sacred rite which the Egyptians had learned from their sacred bird the ibis. In this, however, he had probably confused the ibis with the god Thoth, whose symbol the bird was, and who was the supposed writer of the sacred Hermetic Books. In these rules of health we have an explanation of many prescriptions which I shall touch upon in describing the Ebers Papyrus, and which appear to have been directions for the dietary in different diseases. I may mention here, that their ordinary diet, as quoted by Herodotus, consisted of bread, wine, many kinds of fish, either raw, salted, or boiled; ducks, quails, and other small birds uncooked but salted, and various larger birds and fish, except those set apart as sacred, either roast or boiled. Herodotus, in another place, refers to the dietary of the labourers engaged upon the pyramids, as consisting of radishes, onions and garlic, which cost, he says, in the case of the Great Pyramid, 1600 talents of silver.

When the Egyptians became sick they called in a physician. At the time of which Herodotus writes, about 500 to 450 years B.C., he says:—[3]

"Medicine is practised among the Egyptians on a plan of separation; each physician treats a single disorder and no more. Thus the country swarms with medical practitioners, some undertaking to cure diseases of the eye, others of the head, others again of the teeth, others of the intestines, and some those which are not local." These physicians received their preliminary training in the temples, no doubt, and Josephus[4] quotes the statement of Manetho, that Moses was a priest at Heliopolis, a great medical centre of his time. The physicians received salaries from the treasury, paid, doubtless, from the temple funds, and supplemented by their private fees. According to the statements of several

[1] Herodotus, ii. 77.

[2] Pliny, *Nat. Hist.*, viii., ch. 27. "Simile quiddam et volucris in eadem Ægypto monstravit, quae vocatur Ibis; rostri aduncitate per eam partem se perluans, qua reddi ciborum onera maxima salubre est. Nec haec sola a multis animalibus reperta sunt, usui futura et homini."

[3] Herodotus, ii. 84.

[4] Josephus, *Contra Apionem*, i. 26.

ancient writers, they were obliged to conform their treatment to that prescribed by the Hermetic Books, the patient's death being a capital crime, if he was found to have been treated in any other way. Aristotle says:—[1]

"The Egyptian physicians were allowed after the fourth day to alter the treatment prescribed by authority and even before, taking upon themselves the responsibility." These regulations, however, were almost certainly intended merely as a safeguard against gross quackery and imposition, not to be applied with absolute rigidity.

The physicians were, as I have stated, not simply priests, and, on the other hand, they are not to be confused with the embalmers, who at Thebes were a low class of men, dwelling in a poor quarter of the city. Some confusion has arisen on this point, because of the statement in Genesis l. 2: "And Joseph commanded his servants the physicians to embalm his father, and the physicians embalmed Israel.

"3. And forty days were fulfilled for him, for so are fulfilled the days of those which are embalmed: and the Egyptians mourned for him threescore and ten days."

Referring to the Septuagint version of the Old Testament made at Alexandria during the reign of the Pharaoh Ptolemy Philadelphus about 250 B.C., I find that the Alexandrian translators have rendered the Hebrew word by ἐνταφιασταῖς or "entombers," instead of employing some such word as ἰατροῖς. Thus they evidently recognised the distinction of the two classes as essential.

I consulted Professor Kennedy on this point, and he has very kindly written to me in support of my supposition.[2]

[1] Aristotle, *Politics*, iii. 15.

[2] Professor Kennedy writes:—"As to the Hebrew text of Genesis l. 2, the original is correctly translated in our version; the word rendered 'physicians' is the word always so rendered; the word to embalm is Hebrew *khanat*, which literally means 'to treat with spices.' The kindred Arabic word *khannata* also means to embalm. The word which Herodotus uses in book ii., chaps. 86 ff., is ταριχεύω, literally, 'to pickle' (in salt)—a word always used for curing fish!

"In the Greek translation of Genesis made in Alexandria (*circa* 250 B.C.) the verb khanat is rendered by ἐνταφιάζω, as you know, and the word for physicians by the corresponding noun ἐνταφιάστης. The verb ἐνταφιάζω, from τάφος, the tomb, occurs in Matthew xxvi. 12, and John xix. 40, meaning 'to prepare (the body) for burial by the use of every requisite provision and funeral adornment, to wit, baths, vestments, flowers, perfumes, &c.' *cf.* the noun ἐνταφιασμός, Mark xiv. 8; John xii. 7).

"In Deissmann's *Bible Studies*, page 120 f., I find the following with reference

Diodorus Siculus[1] states that so unpopular were the embalmers that when the incision had been made in the side preparatory to removing the organs, the man who made the cut was driven from the house with curses, pelted with stones and otherwise maltreated. This was the *parachistes* who made the cut. On the other hand, he says that the *taricheutes*, who removed the organs and prepared the body, was reverenced as being of the priestly class. It is most unlikely that such an event ever occurred in all seriousness, for the work of embalming was universal and must have become quite natural to the Egyptian mind. Probably the actions thus reported were of a mere formal character, like others with which all Egyptian ceremonies abounded. In any case, the *parachistes* and *taricheutes* seem to have belonged to the same class, though both differ from the *pastophoroi* mentioned by Clement of Alexandria in the passage quoted above. The latter were a high grade of priests, who preserved the medical (Hermetic) books, and carried them in procession through the streets upon sacred occasions. They were also supposed to know the contents of these books by heart.

The organs were removed from the body through an opening in the side, and no doubt the physicians who had attended the case during life were often, if not always, present. It is quite a simple matter to remove the abdominal organs intact through a small opening in the side, while the thoracic organs can be reached with but little more difficulty. Thus the Egyptian physician had probably unrivalled opportunity for increasing his knowledge of morbid anatomy, upon which skill in diagnosis is undoubtedly most surely founded. Pliny, referring most likely to Ptolemaic times, states that post-mortem examinations were carried out in Egypt for the very purpose of investigating diseases.[2]

to Genesis l. 2, in the LXX. (Septuagint). The translation of (rophe') physician by ἐνταφιαστής 'is explained by the endeavour to introduce a term better suited to Egyptian conditions (*i.e.* embalming). But the professional designation of the person entrusted with this work was ἐνταφιαστής.' Deissmann quotes Pap. Par. 7 (99 B.C.), which is a reference to a collection of papyri in the Bibliothèque Nationale at Paris. He also refers to Lombroso, *Recherches sur l'économie politique de l'Egypte, &c.*, Turin, 1870, p. 136 f.

"Driver, in his commentary on Genesis, says: 'The embalmers (ταριχευταί) formed, however, a distinct profession, so that the term physicians does not seem to be used quite exactly, still . . . some knowledge of anatomy and of the drugs necessary for the preservation of bodies would be required by the embalmers.'"

[1] Diodorus Siculus, lib. i. 82.

[2] Pliny, *Nat. Hist.* xix. ch. 5: ". . . Compertum sit in Ægypto, regibus corpora mortuorum ad scrutandos morbos insecantibus."

As the process of embalming is an interesting one connected with medicine indirectly, I may make brief mention of it here. The account of Herodotus has been proved by recent researches to be so substantially correct that I shall quote it. His knowledge of the matter was obtained from the priests of Egypt, during a visit to that country in the fifth century B.C.; but as the ceremonies varied little from century to century in Egypt, we may assume that the account presented would give a fair picture of the process at the period of which I am treating.[1]

"II. 86. There are a set of men in Egypt who practise the art of embalming and make it their proper business. These persons, when a body is brought to them, show the bearers various models of corpses made in wood and painted so as to resemble nature. The most perfect is said to be after the manner of him[2] whom I do not think it religious to name in connection with such a matter; the second sort is inferior to the first and less costly; the third is the cheapest of all. All this the embalmers explain, and then ask in which way it is wished that the corpse should be prepared. The bearers tell them, and, having concluded their bargain, take their departure, while the embalmers left to themselves proceed to their task. The mode of embalming according to the most perfect process is the following:—They take first a crooked piece of iron and with it draw out the brain through the nostrils, thus getting rid of a portion, while the skull is cleared of the rest by rinsing with drugs; next they make a cut along the flank with a sharp Ethiopian stone and take out the whole contents of the abdomen, which they then cleanse, washing it thoroughly with palm wine and again frequently with an infusion of pounded aromatics. After this they fill the cavity with the purest bruised myrrh, with cassia, and every sort of spicery except frankincense, and sew up the opening. Then the body is placed in natrum for seventy days and covered entirely over. After the expiration of that space of time, which must not be exceeded, the body is washed and wrapped round from head to foot with bandages of fine linen cloth smeared over with gum, which is used generally by the Egyptians in the place of glue. And in this state it is given back to the relations, who enclose it in a wooden case which they have had made for the purpose, shaped into the figure of a man. Then fastening the case, they place it in the sepulchral chamber upright against the wall. Such is the most costly way of embalming the dead.

[1] Herodotus, in Rawlinson's translation.

[2] Osiris.

"87. If the persons wish to avoid expense and choose the second process, the following is the method pursued:—Syringes are filled with oil made from the cedar tree, which is then without any incision or disembowelling injected into the abdomen. The passage by which it might be likely to return is stopped and the body laid in natrum the prescribed number of days. At the end of the time the cedar oil is allowed to make its escape, and such is its power that it brings with it the whole stomach and intestines in a liquid state. The natrum meanwhile has dissolved the flesh and so nothing is left of the dead body but the skin and the bones. It is returned in this condition to the relatives without any further trouble being bestowed upon it.

"88. The third method of embalming, which is practised in the case of the poorer classes, is to clear out the intestines with a clyster and let the body lie in natrum the seventy days, after which it is at once given to those who come to fetch it away."

Examples of the first method of embalming are afforded by the mummies of the Egyptian Pharaohs, Rameses II. and Rameses III., which, being now unwrapped, present the features so clearly as to give a good idea of the king's appearance during life.[1]

The second method was used in the case of Heni, an Egyptian official of 2100 B.C., in the 11th dynasty, preserved in the British Museum, catalogue No. 23425. The bones are well articulated with the ligaments undestroyed, and the mummy has been further treated with bitumen.

On the nature of the substance described as natrum there is considerable difference of opinion. The word used by Herodotus (ταριχεύω = I pickle fish) suggests the employment of brine made from chloride of sodium, and the recent analysis of some mummy wrappings supports this view. Other bodies appear to have been steeped in bicarbonate of soda, and by this process a kind of adipocere was no doubt formed by the soda and the flesh. During this rough method of steeping in alkaline solution for seventy days the bodies must often have decayed considerably, and parts of the body may have required to be replaced. Dr. Wood Jones showed me a forearm and hand that had been nicely manufactured from linen wads supported by a fibula in the centre! No doubt the priests or physicians, in the case of important mummies of kings or grandees, injected some strong and aromatic antiseptic,

[1] The first method is stated by Diodorus to have cost a talent of silver (£225), the second twenty minæ (or about £75).

upon the nature of which they did not choose to enlighten Herodotus, and which has completely evaporated in the course of ages. In the case of finer mummies, too, the skin appears often to have been treated with wax. The statement of Herodotus, that in some cases the bodies were not handed over to the embalmers for some days after death, is substantiated by a piece of bitumen, which Dr. Wood Jones showed me, taken from the pleural cavity of a girl's mummied body. In this mass were embedded numerous beetles and maggots, indicating the delay that had taken place before the commencement of the process.

For the incision in the side a knife of flint or Ethiopian agate had to be used in accordance with the ceremony which had come down from the Stone Age of prehistoric times. After withdrawal of the organs, and presumably after inspection by the physician, these were placed in four Canopic jars. Each of these jars had a lid shaped in the form of one of the four children of Horus who watched over the contained organ. Thus Hāpi, who represented the north, guarded the smaller viscera; Tuamutef, who personified the east, superintended the heart and lungs; Amset, who typified the south, took charge of the stomach and intestines; while Qebhsennuf, who stood for the west, was responsible for liver and gall bladder.[1]

After an elaborate funeral ceremony, in which the *Book of the Dead*, containing the ritual appropriate to each action, was recited, these Canopic jars were placed in the tomb, together with the finished mummy in its case, and such food, drink and furniture as might be requisite to cheer the shade of the departed person.

The ceremonial that accompanied an Egyptian funeral was of a most elaborate type, and was set forth in a complicated ritual, of which the origin is lost in remote antiquity. The details of this ritual we know from various versions of the *Book of the Dead*, of which different chapters were derived from various ages, and even from predynastic times. Portions of this ritual were entombed with the mummy, either written on papyrus, or painted on the coffin, to be a guide and protection to him in the nether world. The most complete version or recension of this book was that used at Thebes, and of this version the finest copy was found in the coffin of Ani, a scribe of 1500 B.C., and is now preserved in the British museum.

[1] For further information, see *History of Egyptian Mummies*, by T. J. Pittigrew, London, 1834; also *Manners and Customs of the Ancient Egyptians*, by Wilkinson, New Edition by S. Birch, London, 1878; also *The Mummy*, by E. A. Wallis Budge.

The Egyptians regarded man's nature as formed of three components. There was the body, with its conscience, intelligence, and other attributes. Secondly, the soul, which was freed by death and dwelt in heaven, and thirdly, the Ka, which can best be translated as shade or ghost. It lived either in the tomb or haunted the abodes of the body during life, was apparently of a benevolent disposition, but possessed sufficient corporeal existence to play a game of draughts with visitors to its tomb.

The god of health was Horus, god of the forenoon and noonday sun, identified in later times with the son of Isis and Osiris. He was acknowledged by the Greeks as the prototype of their Apollo.

The religion of the Egyptians was a curious mixture of sublime spiritual truths and childish superstitions. This is reflected, to a great extent, in their medical beliefs and practices, to an understanding of which we are helped by an appreciation of their religion. I have seen nowhere a better statement of this matter than that given by Dr. Budge,[1] which I may quote:—"When we consider the lofty spiritual character of the greater part of the Egyptian religion, and remember its great antiquity, it is hard to understand why the Egyptians carefully preserved in their writings and ceremonies so much which savoured of gross and childish superstition, and which must have been the product of their predynastic or prehistoric ancestors, even during the period of their greatest intellectual enlightenment. But the fact remains that they did believe in one God who was almighty and eternal and invisible, who created the heavens, and the earth and all the beings and things therein; and in the resurrection of the body in a changed and glorified form, which would live to all eternity in the company of the spirits and souls of the righteous in a kingdom ruled by a being who was of divine origin, but who had lived upon the earth and had suffered a cruel death at the hands of His enemies, and had risen from the dead, and had become the God and King of the world which is beyond the grave; and that although they believed all these things and proclaimed their belief with almost passionate earnestness, they seem never to have freed themselves from a hankering after amulets and talismans, and magical names and words of power, and seem to have trusted in these to save their souls and bodies, both living and dead, with something of the same confidence which they placed in the death and resurrection of Osiris."

One of the commonest amulets used, and its employment seems

[1] *Egyptian Magic*, by E. A. Wallis Budge, M.A., D.Litt., 1901, preface.

to have been universal from the earliest to the latest period of Egyptian history, was the Utchat or Eye of Horus. It was made of various materials and was supposed when worn to confer upon its wearer the strength of the noonday sun, and to secure him in his health. It was also placed upon writings and objects of various sorts, to secure success. When alchemy or chemistry, which had its cradle in Egypt, and derived its name from Khami, an old title for this country, passed to the hands of the Greeks, and later of the Arabs, this sign passed with it. It was also adopted to some extent by the Gnostics of the early Christian church in Egypt. In a cursive form it is found in mediæval translations of the works of Ptolemy the astrologer,[1] as the sign of the planet Jupiter. As such it was placed upon horoscopes and upon formulæ containing drugs made for administration to the body, so that the harmful properties of these drugs might be removed under the influence of the lucky planet. At present, in a slightly modified form, it still figures at the top of prescriptions written daily in Great Britain (℞).

Papyrus Ebers.

The most important extant medical papyrus is that discovered by Ebers during a stay in Egypt in 1872. It is dated by him from a period 1553-1550 B.C., and was supposed by him to represent one of the lost Hermetic Books. This is not now believed to be the case; but it is regarded as a compilation made at the date mentioned of remedies which had been in use from a much earlier period.

"The question here at once arises[2] as to whether our papyrus be an original production. Lepsius, and with him, indeed, most of the Egyptologists, declare it to be merely a copy. We shall not now inquire further into the reasons that the learned investigator has alleged for his opinion. That we have, in fact, however, before us, in this manuscript, only a copy, the papyrus itself gives positive proofs. In some places, namely, page 18, line 1; page 89, line 1; and page 90, line 3, we find written in with red ink in the middle of the text the words qem-sen = 'found destroyed.' What would this phrase do in an original work? Further, we find a few

[1] *Ptolemæi de Praedictio Astronomi Tetrabiblos*, 1535.

[2] In this description, and throughout the prescriptions, the German translation of the papyrus has been used—*Papyros Ebers, das älteste Buch über Heilkunde, aus dem Aegyptischen zum erstenmal vollständig übersetzt*, von Dr. Med. H. Joachim, Berlin, 1890.

passages repeated with only slight variations; compare the following:—Page 37, line 10, to page 38, line 3, and page 38, line 10, to page 39, line 2; page 25, lines 3 to 8, and page 52, lines 1 to 7. There are, besides, to be found not infrequently the same prescriptions repeated in different places and for different illnesses.

"The manner and way in which this manuscript has originated can be best explained, as by Ebers, 'that the sacred scribe had in copying to combine different smaller writings into one, and, without thinking of the sense, had copied several pieces of the same meaning,' and, we may add, drew attention to occasional gaps in these writings by the above-mentioned 'qem-sen.'

"The papyrus has undoubtedly been used; slight inaccuracies in the text have been corrected, consequent, I believe, on its use—sometimes, indeed, with paler ink than that in which the papyrus is written, as one can clearly make out. On the margin of the pages there are now and then short remarks; for instance—probably by a later user—on the margin of page 40 the word nefr='good' has been added three times in pale ink, different from the original; on page 41 there are on the margin the words nefr ar='good to prepare.'"

. . . . . .

The account of the purchase and discovery of this MS. is given by Ebers in the introduction to the facsimile of the papyrus.[1] He says that in the winter of 1872-73, while in Thebes, he was offered this papyrus by a resident there. He was informed that it had been obtained fourteen years before from a grave at El Assassif, near Thebes, and had been found between the legs of a mummy. The original finder of the papyrus was dead, so that the exact grave could not be ascertained. The calendar written on the back of the papyrus impressed Ebers with its chronological importance, which, together with the beauty of the writing, led him to purchase it.

As the Egyptians supposed that some diseases were curable by medicines, while others were amenable only to incantations and prayers, the remedies form a curious medley of active drugs, amulets, and invocations. Many of the prescriptions commend themselves quite well to modern practice, others comprise a mixture of heterogeneous and irrelevant substances, some are disgusting. Still, at their crudest, these prescriptions are no

[1] *Papyros Ebers, das hermetische Buch über die Arzeneimittel der alten Aegypter in hieratischer Schrift*, Leipzig, 1875.

worse than those contained in the pharmacopœias of the Colleges of Physicians of Edinburgh and London as late as the end of the seventeenth century A.D. The papyrus also gives some insight into the physiology of the day, surgical practice, and even tells what the doctors were to say to their patients.

As an example of an incantation, we may take the words to be spoken when remedies were being prepared.

I. "May Isis heal me as she healed her son Horus of all the pains which his brother Set brought on him when he slew his father Osiris. Oh Isis! Thou great enchantress heal me, save me from all evil things of darkness, from the epidemic and deadly diseases and infections of all sorts that spring upon me, as thou hast saved and freed thy son Horus, for I have passed through fire and am come out of the water. May I not light upon that day when I shall say 'I am of no account and pitiable.' Oh Ra, who hast spoken for thy body. Oh Osiris, who prayest for thy manifestation. Ra speaks for the body, Osiris prays for the manifestation. Free me from all possible evil, hurtful things of darkness, from epidemic and deadly fevers of every kind."

Or, take again the words to be said for a burn—

LXIX. "Oh Horus! thou son of God. There is fire in the land. Whether there be water or not there is water in thy mouth, the Nile is in thy feet if thou come to quench the fire." This invocation was to accompany a local application of milk and wool to the burnt part.

With regard to drugs, the Ebers Papyrus and other medical papyri mention the following well-known substances:—Sulphate, oxide, and other salts of lead used as astringents and demulcents; pomegranate and acanthus pith as vermifuges; sulphate and acetate of copper; magnesia, lime, soda, iron and nitre; oxide of antimony, sulphide of mercury; peppermint, fennel, absinth, thyme, cassia, coriander, carraway, juniper, cedar wood oil, turpentine and many other essential oils; gentian and other bitters; mandrake, hyoscyamus, opium with other hypnotics and anodynes; linseed, castor oil, squills, colchicum, mustard, onion, nasturtium, tamarisk, frankincense, myrrh, yeast. Besides these are many drugs, especially essential oils, which probably were valuable remedies, but of which the names, being highly technical, are impossible, so far, to translate.

Among external applications were—the knife, the actual cautery, massage, ointments, plasters, poultices, suppositories, enemata, inhalations, and the vaginal douche and fumigation.

The active means to be used against the results of a burn were as follows:—

LXVII. *First Day.*—Place upon it black āmāt juice.

Second Day.—Place upon it burnt and powdered goat's excrement mixed with active yeast.

Third Day.—Place upon it a plaster made of acanthus thorns dried, ground and mixed in oil, with boiled durra and onion.

Fourth Day.—Place upon it a plaster made of wax, roasted tallow, palm fibre and uāh grains.

Fifth Day.—Place upon it a plaster made of onions, red oxide of lead, and fruit of the am-tree, ground and mixed with copper dust. After this it was to be bandaged up with a poultice made of boiled uāh grains.

The following is a remedy to cause the hair to grow, prepared for Ses the mother of the late Pharaoh of Upper and Lower Egypt:—

Toes of a dog	1 part.
Ripe dates	,,
Asses hoof	,,

Boil carefully in a pan of oil and use to rub in.

Of another prescription for baldness appearing in patches it must have been somewhat difficult and dangerous to obtain the ingredients, though the pomade is certainly impressive.

LXVI.	Lion's fat . . .	1 part
	Hippopotamus fat . .	,,
	Crocodile fat . . .	,,
	Goose fat	,,
	Snake's fat . . .	,,
	Nubian ibex fat . . .	,,

to be mixed and rubbed into the scalp of the bald one.

Still another prescription for baldness which savours of homeopathy is:—

Writing ink
Cerebro-spinal fluid

to be mixed in equal parts and applied to the head.

The following gives the method for making an inhalation:—

LV.	Animi solatium grains .	1 part
	Meni-resin ,, .	,,
	Aām plant ,, .	,,

Rub down together; take seven stones, heat them in the fire, place upon one of them some of the above. Cover it over with

a new vessel in which a hole is bored. Place a reed in the hole and set the mouth to the reed so as to inhale the vapour. Similarly with the remaining six stones; afterwards eat something fat, either of fat, flesh, or oil.

To remove granules from the eye.

LVII.	Collyrium . . .	1 part
	Subacetate of copper . .	,,
	Onion	,,
	Wood dust	,,
	Sulphate of copper . .	,,

Stir up in water and apply to the eyes at the back.

Note.—I may further say here, that in addition to using the modern bluestone treatment for trachoma or Egyptian ophthalmia, the Egyptians of 1500 B.C. possessed forceps with flat, broad blades, which were used apparently for removing an inward growing eyelash, and were admirably adapted for crushing the granules. Professor Sayce has shown me an excellently preserved pair of copper forceps of this period in his collection.

One eyewash or salve is given on the authority of a Semite from Byblos (Gebal in Phœnicia) who was probably a great authority upon eye diseases in his time. His eyewash is mentioned in much the same way that one might recommend to-day some prescription of a noted specialist in Wiesbaden or Vienna.

To prevent trichiasis from doing harm to the ball of the eye, the following characteristic directions are given:—

LXIII.	Pull out the hair and apply—	
	Myrrh	1 part
	Lizard's blood . . .	,,
	Bat's blood . . .	,,

For dacryo-cystitis, the writer of the Ebers Papyrus gives the following, with the remark, "Note well, for this is the real thing."

	Collyrium . . .	1 part
	Wood dust . . .	,,
	Dry myrrh . . .	,,
	Honey	,,

Anoint the eye four days with this.

For a suppurating wound, the following early example of antiseptic treatment is recommended:—

LXVIII.	Qebu oil . . .	1 part
	Crocus	,,
	Expressed cedar oil . .	,,
	Sefet oil	,,

Grind together and apply as a plaster.

To draw out pus the following is recommended:—

LXXVI.	Date meal roasted . .	1 part
	Meal of wheaten chaff . .	„
	Bicarbonate of soda . .	„
	Endivia seeds . . .	„

Warm, and apply as a plaster.

One notes many curious and sometimes repulsive substances in these prescriptions, but it would be unjust to conclude that they were indifferently used for the diseases in connection with which we find them named. In the first place, there are various recipes quoted for each disease, and the compiler of the papyrus apparently included everything of which he had heard as likely to benefit each disease. Again, if we consider a time not far removed from our own we find that the Pharmacopœia of the Royal College of Physicians of London for 1651 A.D. prescribes—to select a few examples:—Hare's brain; swallow's nest; horn of the stag, the rhinoceros, and the unicorn; powder of Egyptian mummy; blood of the cat, pig, bull and tortoise; excrement of doves, goats, stallions, cows and men; bile of pigs, hawks, bulls and bears; urine of goats, boars and boys; stone from the human bladder; and dead man's fat and skull. He, therefore, who insists that experienced and liberal-minded men of this profession in ancient Egypt were entirely bound to foolish spells and fanciful conglomerations may be compared to someone of a future race digging three thousand years hence among the ruins of London, and who, finding a copy of this Pharmacopœia, should forthwith contemptuously dismiss from mind the possible existence of Sydenham or Harvey.

We gain from the Ebers Papyrus some interesting sidelights upon the views regarding the physiology of the blood-vessels, and in this we see at once a marked contrast between the elementary scientific knowledge of the Egyptians and the highly developed and useful empiric practice that I have tried to indicate.

One passage in the papyrus purporting to be written for the Pharaoh Usaphäis of the First Dynasty (3400 B.C.) gives some account of the heart and vessels, and makes a vague suggestion of the passage of the blood through them.

Another section of the same papyrus gives a description of the action and importance of the heart itself.

XCIX. "From the heart come the vessels to the whole of the

body. Any physician . . . may feel these if he puts his finger upon the head, or the back of the head, or the nose, or the region of the stomach, or either arm or the legs. Everywhere the action of the heart meets him, for its vessels run to all the limbs. Therefore is it named the centre, over the vessels of all the limbs. Four vessels run in the nasal cavities, of which two bring mucus and two blood. There are four vessels in the interior of the temples from which the eyes obtain their blood. . . . There are four vessels which distribute themselves in the head. . . . There are four vessels to the ears, two on the right side and two on the left side. The vital spirit goes in at the right ear, and the breath of death into the left ear. . . . Three vessels (*i.e.* artery and two veins) lead to each arm and to the fingers, and three vessels lead to each leg which reach down to the soles of the feet. . . . Two vessels lead to the kidneys, one to each, four vessels lead to the liver which bring it moisture and air. Here originate all sorts of diseases, for they are mixed with the blood. Four vessels go to the intestines and the spleen, which also bring them moisture and air. Two vessels go to the bladder, which produce the urine. Four vessels proceed to the great intestine, and conduct moisture and air."

Next follows a great deal of theory as to the manner in which diseases originate from the action of the heart, and the advice, which really sums up the whole of cardiac therapeutics, that when the heart is diseased one must obtain for it rest as much as possible.

The reference to the vital spirit and the spirit or breath of death is interesting, and suggests the superstition regarding the luckiness of the right side of the body, and the sinister attributes of the left.

We may note in passing that the Egyptians regarded the heart as the fountain of all the moral qualities and the seat of conscience. From them, no doubt, our modern metaphors of "clean hearted," "large hearted," &c., are derived indirectly through the Hebrew scriptures. The brain, on the contrary, was considered merely as so much pulp, to be scraped out and cast away when the body was embalmed.

As to pathology, the difficulty of translating technical names, together with the totally different outlook upon disease taken by the Egyptian physicians and ourselves, renders it extremely hard or impossible for us to grasp more than a vague idea of the diseases which these old physicians mean to indicate.

Several forms of intestinal parasite with their appropriate vermifuges are clearly indicated; a pernicious type of bloodlessness seems to have greatly exercised their curative endeavours,

and an infective disease called "uchedu," which is difficult to identify, is very frequently mentioned. At a later date, the discoveries of Professor Elliot Smith and Dr. Wood Jones have shown that malignant disease, leprosy, infantile paralysis, inflammatory diseases of bone, gout, and, above all, rheumatoid arthritis, were common maladies as they are now. The question of syphilis has been raised in connection with the advanced atheroma that has been found in the large arteries, the diffuse signs of periostitis, and particularly in regard to a case of ulceration of the skull described recently by Professor Lortet.[1] No absolutely conclusive evidence as to the existence of this disease in early Egypt has, however, yet been found; and Professor Elliot Smith has demonstrated that the supposed ulceration is probably due to the attack of insects ages after the bones were buried.[2] There has even been discovered a mummy showing old-standing fibrous adhesions in the pelvis consequent on appendicitis!

With regard to surgery, the statement has been made in almost every text-book on the history of medicine that the Egyptians practised the amputation of limbs. I have not been able to find any basis for this statement, and Professor Sayce tells me that the very idea of the mutilation of the body was so foreign to their religious ideas, that this practice would have been impossible. The original of the statement regarding amputations appears to have been made by Larrey, when he accompanied Napoleon's army of invasion into Egypt, and visited the pyramids and temples of this country. He described pictures on the walls showing these surgical procedures, of which apparently he had mistaken the meaning.[3]

Another statement which is commonly made is, that the Egyptians were the first to stop decayed teeth with gold. This may be the case; but after considerable search and enquiry, I have been unable to obtain any confirmation of the statement.

Obstetric practice, as we learn from Exodus i., was in the hands of midwives. Four of these, a chief midwife with three assistants, were generally present at the delivery of the patient, who sat upon a special stool.[4]

[1] Lortet et Gaillard, *Archives du Muséum d'Hist. Naturelle de Lyon*, 1907.

[2] Elliot Smith, *Lancet*, 1908, vol. ii. p. 521.

[3] Larrey, *Relation Historique et Chirurgicale de l'Expédition de l'Armée d'Orient*, Paris, 1805.

[4] See, further, "Birth Stools in Egypt," by Sir A. R. Simpson, *Edinburgh Medical Journal*, September 1908; also Spiegelberg, *Ægypt. Randglossen zum Alt. Test.*, 1904, pp. 19-25.

Caton[1] quotes Dr. Grant Bey as asserting that the operation for cataract was practised in ancient Egypt. This is interesting, in support of the contention that cataract was operated upon in Babylonia 2000 years B.C.

Although the Egyptians would not, in all probability, amputate limbs, except in so far as the mere severing of a hopelessly shattered member might be concerned, we know from the Ebers papyrus that they both possessed great skill in the diagnosis of tumours, and removed them by knife and cautery.

The following is the treatment of what seems to be either a collection of tuberculous glands in the neck, or an abscess there:—

CVI. "When thou meetest a fat swelling (that is tumor scrofulosus?) in the neck, and findest it like an abscess of the flesh, then say, 'I will treat the disease with the knife, while I carefully avoid the vessels.' Make them a plaster as a means of healing from the swelling.

"When thou meetest a tumour which has attacked a muscle . . . when thy finger examines it and it is like a hard stone under thy fingers (carcinoma?) . . . say, 'I will treat the tumour with the knife.' Cover it with fat and treat it as one treats a suppurating wound in any part of the body."

The following is a clear description of the diagnosis of a fatty tumour which any one may recognise, and of its treatment. CVII. "When thou meetest a fat tumour in any part of a person, and findest that it goes and comes under thy fingers, and also quivers when thy hand is still, say then of it, 'It is a fatty tumour, I will treat the disease.' Treat thou it with the knife and heal it as one heals an open wound."

The following is the method of treating a vascular tumour that bleeds. "If thou meetest a tumour of the muscles in any part of a person's body and findest it of rounded shape grown up under thy fingers and spread out upon his flesh; if it is not large and does not project greatly, say thou of it, 'It is a tumour of the muscle, I will heal the disease. The muscles produce it. . . .' Treat thou it with the knife and burn it out with fire, that it may not bleed. Heal thou it with the glowing metal."

These are sufficient extracts to show that the physicians of this time possessed considerable power in differentiating tumours, and did not fear boldly to remove them.

In the treatment of fractures the medical practitioners of the New Empire seem to have possessed a considerable degree of

[1] Caton, *The Harveian Oration for* 1904.

skill.[1] They did not indeed rise to the level of Hippocrates who, in Greece 400 years B.C.,[2] states that a mended fracture of the thigh in which shortening has taken place is a great disgrace and an injury. But they were able by means of palm fibre splints and linen bands even so early as the time of the Fifth Dynasty, to unite broken femora and tibiæ so that no rotation and no tilting of the lower fragment resulted.[3] Fractures of the forearm they seem also to have mended skilfully, but fractures of the clavicle appear to have been left to the *vis medicatrix naturæ* with sad results on the shapeliness of the shoulder.[4]

Other Papyri.

Of the other papyri I need not say much. The Berlin Medical Papyrus is supposed to have been part of a large library at Memphis, which is mentioned by Galen as having contained medical books. He speaks of a panacea used by the Egyptians of which the formula is to be found in one of these. This library was probably kept by the priests of Im-hotep. The papyrus belonged to the Nineteenth or Twentieth Dynasty. It is not apparently of so much real value, nor is it so large as the papyrus of Ebers.

Kahun Medical Papyrus, found at Kahun in April 1899, dates from before the reign of Amenemhat III. It is $39\frac{1}{2}$ inches in length and consists of three pages which had been mended and strengthened by its ancient possessor with strips torn from other papyri and pasted on the back. Its text consists entirely of gynecological instructions and prescriptions without title or introduction. In the first two pages were 17 prescriptions all of one form. "Treatment for a woman suffering from," etc. (symptoms); "Say thou with regard to it—'It is,'" etc. (diagnosis); "Make thou for it" (prescription).

The substances prescribed are generally reasonable and obvious, such as beer, cow's milk, oil, dates and other fruits, herbs, incense, etc. Sometimes they are of an offensive character. The quantities are large: the henu ($\frac{6}{7}$ths pint) for liquids, and the cubic quarter ($\frac{1}{64}$) hekt, or $4\frac{1}{2}$ cubic inches for solids.

[1] I desire here to express my gratitude to Professor G. Elliot Smith and Dr. Wood Jones for much valuable information regarding ancient Egyptian pathology and surgery, and especially for their kindness in allowing me to make lantern slides of their material to illustrate this lecture.

[2] Hippocrates: on Fractures, sec. 19.

[3] *The Most Ancient Splints*, by G. Elliot Smith, M.D., F.R.S., *British Medical Journal*, 28th March 1908.

[4] See *The Archæological Survey of Nubia Bulletins*, 1908.

In the first two pages some of the diseases, as hysteria and influenzal seizure, are easily recognisable, and the treatment seems appropriate enough. The third page, which seems to belong to another period or to be derived from some different source, contains mostly quack prescriptions, such as directions for deciding whether an unborn child is male or female.

What I have said will suffice to show that the assistance of a class trained in the art of healing was eagerly sought in the lands where the dawn of our civilisation began. If we remember that the time of which I have spoken was a period of slow transition from an age of bronze to one of iron, we see that this art occupied a position of high efficiency as compared with other crafts, and of great advancement in the general scheme of human knowledge. Those who devoted their energies to medicine exercised the art with a fair measure of success, and in proportion to their labours, were held in honour by those whom they had served.

A REMARKABLE CASE OF HÆMORRHAGE OF THE PONS VAROLII AND MEDULLA OBLONGATA.

By BYROM BRAMWELL, M.D., F.R.C.P.,
Senior Ordinary Physician to the Edinburgh Royal Infirmary, &c.

THE case which I am about to record is a very remarkable one; indeed in my experience it is unique. I do not know of any other case in which a hæmorrhage slowly and gradually infiltrated the tissue of the pons Varolii and medulla oblongata and in which the hæmorrhage ultimately extended from the top of the pons Varolii to the very bottom of the medulla oblongata; in which after a small primary hæmorrhage which occurred three weeks previously, such an extensive hæmorrhage as was present in this case slowly and gradually occurred, taking a week to reach its full development, and in which up to, practically speaking, the time of death there was no unconsciousness. The following are the notes:—

CLINICAL HISTORY.

C. G., a married man, aged 31, an engineman by occupation, was admitted to the Edinburgh Royal Infirmary on 22nd June 1908, complaining of double vision and weakness in the left arm and leg.

History.—He stated that he had been a perfectly healthy man, never having required a doctor, never having complained of any

illness until five days before he came to the hospital. In particular, he had not suffered from headache, vomiting or giddiness until this attack developed.

He denied venereal disease. His children were healthy, his wife had had no miscarriages. He had been a steady man. His family history was excellent.

On Wednesday, 17th June 1908, he found when he got up that he was giddy, that he saw double, and that his left arm and left leg were weak. He, however, determined to go to his work; he walked to his place of employment with great difficulty, reeling, he says, like a drunken man. He found that he was unable to work; he consequently came home and went to bed. The next day (18th June) he sent for his doctor, who kept him in bed until 22nd June—the day on which he came to the hospital.

Condition on Admission to Hospital.—He looked a perfectly healthy man. His temperature (98·8°), pulse (88) and respirations (16) were normal; the blood-pressure was 150. I may here say that the urine, which was repeatedly examined during his stay in hospital, was always found to be normal, and that the heart was normal.

There was marked weakness of the left arm and leg (dynamometer, right = 120, left = 20); he complained of numbness in the left arm and leg. On objective examination the tactile sensibility and the sensibility to pain seemed slightly diminished in the left arm and leg; but there was no marked anæsthesia or analgesia; the temperature sense was normal. The right external rectus muscle was paralysed, and when the patient attempted to look to the right some nystagmoid jerkings were seen in the left eye; in other words, the conjugate movement of the eyeballs to the right, which is effected by the combined action of the right external rectus muscle supplied by the right 6th nerve, and the left internal rectus muscle supplied by the left 3rd nerve, was to some extent involved. The pupils and optic discs were normal. The knee-jerk and Achillis-jerk on the left side were exaggerated; ankle-clonus was present on the left side; and there was a well-marked double extensor response.

Diagnosis.—The paralysis of the *right* external rectus muscle, supplied by the right 6th nerve, and of the *left* arm and leg showed that there was a lesion on the right side of the pons Varolii, at the level of the 6th nerve nucleus.

The sudden onset of this lesion in a man who had previously been quite healthy was suggestive of a vascular lesion, but the

exact nature of that vascular lesion was doubtful. The heart and arteries were healthy, *i.e.* there was no obvious cause of embolism. The patient's age, the practically speaking normal blood-pressure (150 mm. of mercury) and the healthy condition of the urine, heart and arteries did not favour the diagnosis of cerebral hæmorrhage.

Up to the time of the occurrence of the lesion the patient had been perfectly well; he had not had syphilis; he had not suffered from headache, vomiting or giddiness; the optic discs were normal; consequently there was nothing to show that he was the subject of an intracranial tumour—one of the things which suggested itself as a likely cause; it is unnecessary to say that in some cases of gliomatous tumour, large dilated vessels are found in the gliomatous tissue, and that these are apt to rupture and give rise to cerebral hæmorrhage.

Taking the whole of the facts of the case into account I was disposed to think that the most likely lesion was a small vascular glioma in the pons Varolii at the level of the 6th nerve nucleus, which up to the time of the occurrence of the sudden lesion (presumably a hæmorrhage) had not produced any symptoms (headache, vomiting, giddiness, optic neuritis, &c.).

Treatment.—The patient was kept quiet in bed on a light diet, and iodide of potassium was administered.

Progress of the Case.—For a fortnight after his admission to hospital he remained, practically speaking, *in statu quo;* there was during this time some slight improvement in the condition of the arm and leg; during this time there was no headache, vomiting, giddiness or other cerebral symptom, and the optic discs remained normal.

On 8th July he stated that he felt weak all over and he complained of some right-sided frontal headache. On 9th July the weakness in the left arm was distinctly greater than it had been before. He now for the first time had some difficulty in articulation, owing, he said, to the fact that his tongue could not be moved properly in the mouth. There was also some difficulty in swallowing. The tip of the tongue when protruded was turned slightly to the right side. On 11th July the right frontal headache was worse and he vomited; the tongue and palate difficulties were also more marked. On 12th July there was retention of urine and a catheter had to be passed; articulation was still more difficult; he had vomited several times; he did not look well; hearing in the right ear was now found to be considerably impaired—at the time of his admission to hospital it was normal.

On 13th July I examined him very carefully at my daily visit and made the following note:—The patient looks much worse; he lies with his head turned to the left. He complains of a good deal of frontal headache, chiefly marked on the right side. Speech is very thick. The paralysis of the left arm and left leg is more marked. There is complete paralysis of the right external rectus muscle and defective conjugate movement of the eyes to the right; there is also some slight defect in the conjugate movement of the eyes to the left. There is some drooping of the eyelids (ptosis); this gives the patient a drowsy look, but he is quite sensible. The pupils are equal and active; the optic discs are normal. There is no paralysis of the motor division of the 5th; the patient says that a touch on the left side of the cheek feels cold, but there is no definite anæsthesia, analgesia or thermal-anæsthesia in the area of distribution of the 5th nerve. Hearing is markedly impaired in the right ear. The reflexes are in the same condition as on the patient's admission to hospital (knee-jerk and Achillis-jerk on the left side exaggerated, ankle-clonus present on the left side, a double extensor response). The abdominal reflex on the left side is absent, that on the right present but diminished in degree.

At 2 P.M. on 13th July the patient had great difficulty in breathing, apparently the result of paralysis of the respiratory muscles; this lasted for several hours; at 11 P.M. the breathing became easier. On 14th July, at 6.30 A.M., the patient died; until shortly before death he was quite sensible.

Summary.—Such were the facts of the case; let me summarise them. A healthy man, aged 31, woke up on the morning of 17th June 1908 to find that he was giddy, that he saw double, and that the left arm and left leg were weak (partly paralysed). On 22nd June 1908 he walked up to the Infirmary. On examination, there was paralysis of the left arm and leg, paralysis of the right external rectus muscle (right 6th nerve), some impairment of the conjugate movement of the left eyeball to the right, left ankle-clonus and a double extensor response.

These conditions were clearly indicative of a lesion in the pons Varolii on the right side at the level of the 6th nerve. The heart, arteries and urine were normal. There had been no previous symptoms suggestive of an intra-cranial tumour and the optic discs were normal.

For a fortnight the patient remained practically *in statu quo;* then, on 8th July, he complained of right frontal headache and

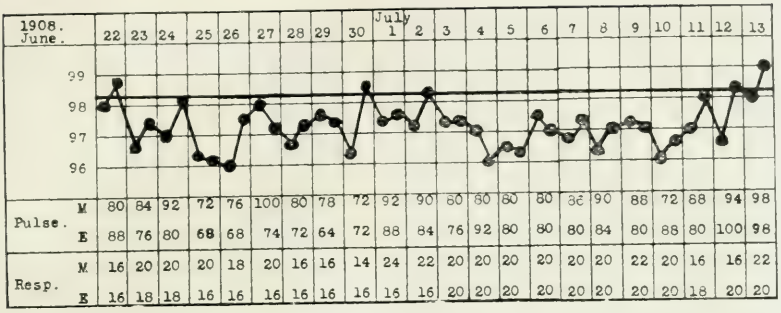


Fig. 1.—Temperature chart in the case of hæmorrhage into the pons Varolii and medulla oblongata described in the text.

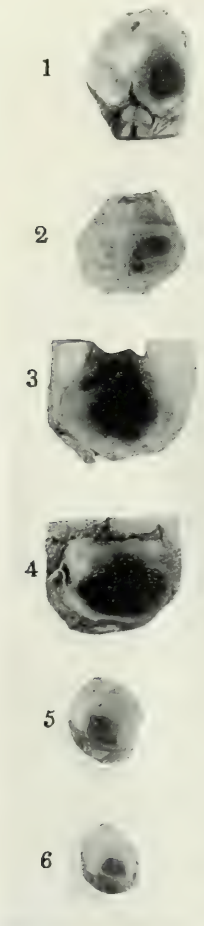


Fig. 2.—Series of sections through the pons Varolii and medulla oblongata in the case of hæmorrhage described in the text, seen from above.

No. 1, at the level of the 3rd nerve nucleus; No. 2, a little below the corpora quadrigemina; No. 3, at the level of the middle peduncle of the cerebellum; No. 4, at the junction of the pons with the medulla oblongata; No. 5, through the middle of the medulla oblongata; No. 6, through the lower end of the medulla oblongata, just above the decussation of the pyramids.

Fig. 3.—Section through the cerebellum and pons Varolii at the level of the crura cerebri and 3rd nerve nuclei.

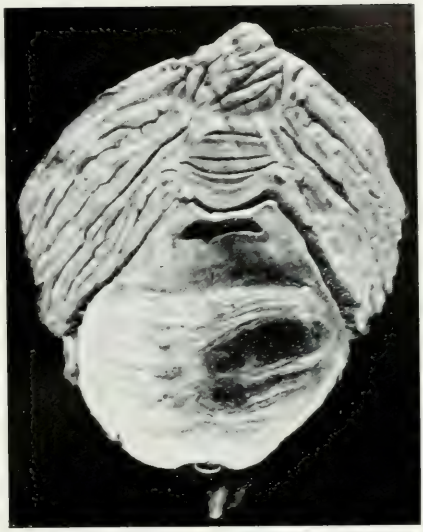


Fig. 4.—Section through the cerebellum and pons Varolii at the greatest thickness of the pons. The hæmorrhage has infiltrated the tissue of the pons; strands of nervous tissue are seen passing between masses of hæmorrhage.

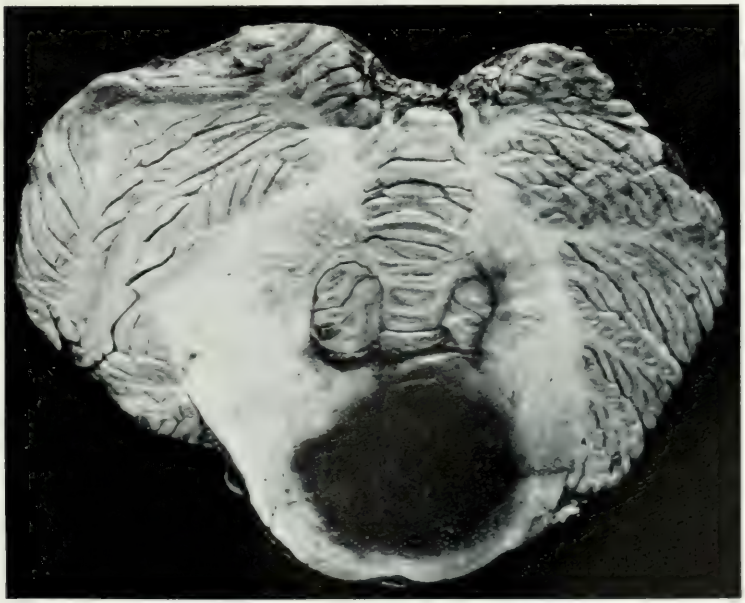


Fig. 5.—Section through the cerebellum and pons Varolii at the level of the middle crura of the cerebellum. The hæmorrhage was most extensive at this level, and had, practically speaking, destroyed almost the whole of the pontine tissue.

Fig. 6.- Section through the cerebellum and medulla oblongata at its upper end.

Fig. 7. Section through the cerebellum and medulla oblongata, just above the decussation of the pyramids.

vomited; the paralysis of the left arm and leg became more marked; difficulty in speaking and swallowing, impairment of hearing in the right ear and double ptosis developed; the ocular paralysis became more marked—the conjugate movement to the right very defective, the conjugate movement to the left somewhat impaired; finally, there was great difficulty in breathing (paralysis of the respiratory muscles), and the patient died on 14th July, exactly a month after the onset of the disease, being quite conscious until shortly before death.

The temperature is shown in Fig. 1; it will be seen that it was subnormal throughout (practically speaking) the whole course of the case.

Post-mortem Examination.—This was made on 14th July at 11 A.M. Some old adhesions were present in the abdomen and at the apex of the right lung, but there was no evidence of tubercle. The kidneys were very slightly cirrhotic. The heart and great viscera were normal.

The membranes of the brain, the great vessels at the base of the brain, and the exterior of the brain looked quite normal. The brain was injected with 10 per cent. solution of formalin and cut into after hardening. With the exception of the lesion (hæmorrhage) in the pons Varolii and medulla oblongata, which I will now describe, the brain was perfectly normal.

The hæmorrhage extended from the top of the pons Varolii, from the right crus cerebri above to the bottom of the medulla oblongata, *i.e.* to the decussation of the pyramids, below (see Figs. 2, 3, 4, 5, 6 and 7). I will now throw on the screen a series of sections showing the position of the hæmorrhage. At its upper and lower limits the hæmorrhage is, you will observe, chiefly limited to the right side; in the middle of the pons it is much more extensive and involves both sides. The hæmorrhage seems to have slowly infiltrated the nervous tissue. Even where the hæmorrhage is very extensive strands of nervous tissue can be seen passing through it (see Fig. 4). In many places, large dilated vessels can be seen in the tissue of the pons, some little distance outside the seat of the hæmorrhage. In some places, more particularly at the level of the 6th nerve, there is marked proliferation of the neuroglial tissue. In some sections at this level there are some large cells, the exact nature of which seems to me to be exceedingly doubtful. I had difficulty in making up my mind whether they were indicative of a tumour formation or not. The large dilated vessels outside the actual area of hæmorrhage also

seemed to me suggestive of a glioma with dilated vessels. I consequently asked my friend Professor Muir of Glasgow to examine the sections. He has carefully done so, and states that, as far as he sees, there is not sufficient evidence to warrant one in concluding that there is any tumour formation, or that prior to the hæmorrhage there had been any angeiomatous condition of the vessels. I fear we must, therefore, leave the exact nature of the primary lesion, which was the cause of the hæmorrhage, in doubt. The whole course of the case is certainly to my mind highly suggestive of a small vascular glioma, from the vessels of which the hæmorrhage had been poured out.

After the first small hæmorrhage the lesion seems to have been quiescent for three weeks; then fresh symptoms gradually developed, no doubt due to a slowly developed hæmorrhage, which gradually infiltrated the nervous tissue of the pons Varolii and medulla oblongata, making its way both upwards and downwards in the remarkable way and to the remarkable extent which the sections show.

THE VALUE OF BISMUTH INJECTIONS INTO CAVITIES FOR DIAGNOSIS AND TREATMENT.

Delivered before Forfarshire Medical Association on 10th December 1908.

By ALEXANDER DON, M.A., M.B., C.M., F.R.C.S.,
Surgeon to and Lecturer on Clinical Surgery in the Royal Infirmary, Dundee.

It was in June and August of this year that Emil G. Beck[1] published two papers in the *Archives of the Röntgen Rays*, in which he pointed out the value of bismuth injections for purposes of diagnosis and treatment, and so fascinating was the simplicity and effectiveness of the method, and so absolutely assuring was Beck's assertion that he had found a certain cure for all tuberculous fistulæ, that I at once set about testing this method for myself. Beck's preparation of 33 per cent. bismuth subnitrate in vaseline is the one I have chiefly used, but I soon found that it was rather slow in firming, especially in warm weather, and I later mixed the bismuth with the pharmacopœal ungt. paraffini, varying the proportions of the hard and soft paraffins according to the season. This is easily sterilised—and this should be done before every injection—by heating the container in boiling water for half

an hour, and it hardens very quickly at a temperature that is quite suitable for injection. I use either a common glass syringe or an all-metal one. Both are equally satisfactory and can be sterilised. The syringe is filled by the simple method of removing the piston and pouring the melted mixture into the barrel. The piston is reinserted and the syringe laid in hot, sterile water till the wound has been prepared. For a considerable time I have eschewed the use of the probe in all sinuses, for the simple reason that one is certain to infect the deeper parts by germs carried on the point of the probe from the surface. Also, if the least force be used, one is equally certain of opening up new tracts or injuring neighbouring organs, besides failing to explore the branch sinuses. These contingencies are so apparent that the instrument is dangerous and of little use for diagnostic purposes. With the syringe and the bismuth mixture it is otherwise. The liquid sticky mass flows in such a way that it adheres and is retarded at the sides of the cavity, but passes on readily at the centre, providing thus a bismuth-lined cavity and avoiding the risk of carrying germs to the depths. It has another advantage. No damage can be done before tension and pain is felt by the patient, and if the surgeon is content to abide by these subjective signs he may proceed without misgiving till the cavity is quite filled. Of course one would not inject this mixture into any cavity where the presence of bismuth would be objectionable, as into a urinary or biliary fistula, or into sinuses about the skull, but one might safely use it for all cavities where free irrigation would formerly have been used, and where there is no leakage of a normal secretion.

At first, in closed tubercular abscesses, I made a small puncture and allowed the pus to escape, and then filled the cavity with the bismuth mixture, as suggested by Beck. Most of the cases thus treated did exceedingly well, but their behaviour was not uniform. In some the bismuth and vaseline would come away after a few days through the puncture, and a thin discharge, unlike either pus or serum, but more like dirty water or the fluid found in the peritoneal cavity after a ruptured gastric ulcer, would discharge for a time and then cease, the cavity remaining closed. The fluid was found, on examination at the Pathological Laboratory, to be sterile. In other cases the cavity would at once begin to fill, and after causing some pain by tension, though no rise of temperature, it would burst through the old wound and discharge a considerable quantity of this muddy fluid. If kept sterile it healed up, probably to break down again, and if injected once more it would go through

the same stages. These cavities I now drain immediately they begin to fill up, though Beck advises reinjection at intervals of a week. I am convinced that when tension takes place there is an acute process going on with serous exudation, and if this is not relieved there is a liability for the bismuth to become absorbed, and to set up a stomatitis such as I showed you in the girl to-night. I am not convinced of the necessity of leaving a quantity of the bismuth and paraffin as a trellis-work, to be organised into connective tissue, as Beck suggests. Such tissue is always a point of feeble resistance, and the less of it formed in an old tubercular tract the better. In fact, operative removal of such tissue when healing has taken place is quite usual.

The following cases, which I have chosen as illustrative of the method, I shall now briefly describe:—

Case I.—J. M'K., a girl, aged 13, was admitted to my ward on 9th July 1907 with a swelling over the trochanter major of 5 days' duration. There had been pain for more than a month, but no night startings or visible swelling. The abscess was incised, scraped and drained for 48 hours, after which it closed. She remained well for almost a year, and returned to the Infirmary on 6th July 1908. The wound had broken down a fortnight previously, and there was now a small sinus opening on the old incision. An injection of bismuth subnitrate in vaseline was given under chloroform, owing to the nervous condition of the patient. A plate was taken next day, and the condition is shown in Plate I. The shadow of the bismuth extends upwards above the neck and head of the bone, and a dark streak or two run up between the muscle fibres. This streaking is due to the pressure when injecting, and shows one of the dangers of the method, viz. possible rupture of a thin-walled cavity, if the injection is being done with the patient unconscious and unable to indicate when the pressure becomes painful. The cavity was opened and scraped out, and the wound had quite healed a fortnight later, and has remained closed since. A very similar case is at present in my male ward. The history is that of an abscess appearing over the trochanter major 3 weeks ago. It burst, and later was opened and scraped by his doctor. I could imagine the surprise that the plate would cause him, for a probe would not get far round the thigh, and the bismuth had penetrated downwards for about 6 inches inside the thigh and up along the psoas muscle. Probably a larger injection might have reached a carious vertebra, but the pain complained of in the thigh made us desist.

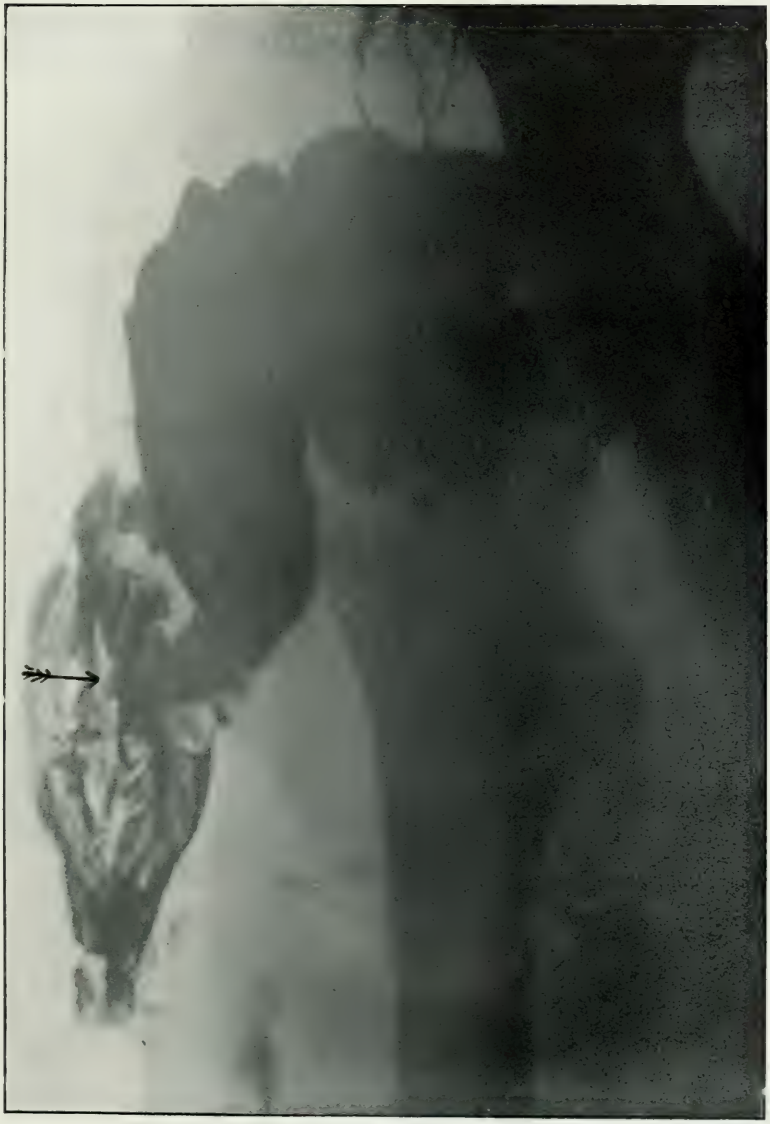


PLATE I.

Plate II.

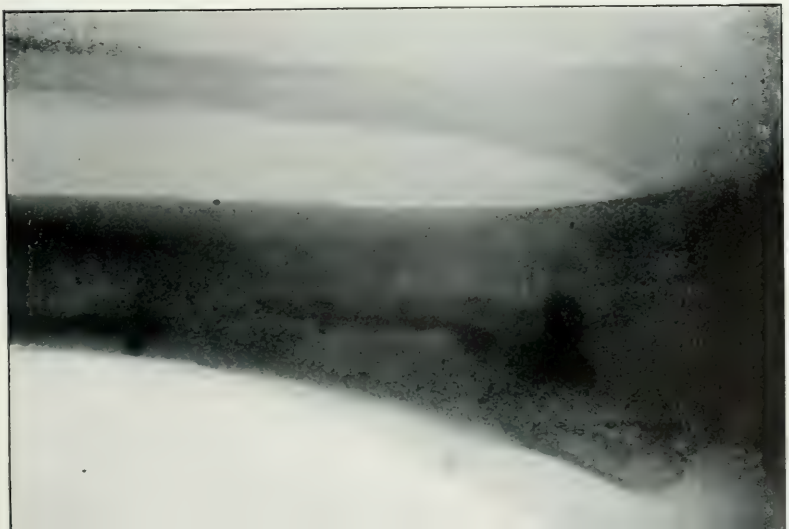


Plate III.

The next two cases are examples of partial failure of the method. There was a good deal of tension from inflammatory swelling, due to septic infection, when they came under my care, and the bismuth has not remained in the whole length of the sinuses.

Case II.—J. M., aged 20, was treated by a Thomas's splint 4 years ago, and has since undergone about half a dozen operations, one of which nearly proved fatal. His hip and thigh show scarring everywhere. The injection was made on 10th September, and shows well the futility of at least some of the operations (Plate II.). The sinus passes within the pelvis through the acetabulum, where few surgeons would care to follow it. There has been some improvement since injection, but this is one of the regions where the bismuth might cause trouble if injected repeatedly and in great quantity. I reinjected this case a few days ago, and found that no bismuth passed inside the pelvis.

Case III.—J. M., a boy, aged 8, was under the care of another surgeon from 3rd June 1908, with tubercular openings about the shoulder. The sinuses were scraped on the 9th of the same month, and a counter-opening for drainage made behind and tubes inserted. No improvement followed, and another operation was performed on the 16th of July. There was a copious discharge after both operations, and no real improvement, according to the notes then taken. He had been having fortnightly besides 4 mm. of tuberculin solution, *i.e.* about 1/4000 milligram. On the 10th of August, under chloroform, bismuth subnitrate solution was injected at the back of the shoulder until it came freely out at the other two openings in front. There was not much to be seen on the plate, but the sinuses had all closed in 3 weeks. A week later, after active movement of the shoulder joint, some more discharge came away, and a second injection was tried, but none could be forced in, and he was sent home a fortnight later with the shoulder practically healed.

The next two cases show the value of the method in the investigation of cavities in bones.

Case IV.—J. P., a boy, aged 8, came into the hospital in October of 1907 suffering from acute osteomyelitis, which had been incised. There was great swelling, redness and œdema, and an operation was performed immediately he was admitted. Later,

on two or three occasions small sequestra were removed, and he went home in February of this year able to walk, but with sinuses at the upper and lower ends still discharging. He was seen on several occasions between his discharge and his return to the hospital on the 21st of November last. There was then two discharging sinuses—one in the upper third and one in the lower third—but he was able to walk, and had very little pain. I injected bismuth through these two openings, and in the upper sinus it passed into the centre of the bone and came out on the surface again 2 inches further down (Plate III.). The lower sinus led to a cavity near the lower epiphysis.

Case V.—J. K., aged 8, has had some pain in the ankle since June last. An abscess formed and was incised, but did not show any inclination to heal. He was admitted to the Infirmary on the 23rd of November 1908. Under chloroform the opening was enlarged, and tubercular bone reached and removed, as far as possible, with a Volkmann's spoon. The plate showed this cavity filled with bismuth mixture, and the site of the disease was easily located. There was very little discharge from the heel after the operation.

Case VI.—J. Q., aged 11, was admitted on 24th November. He had noticed for a week a small protrusion in the lower right hypogastrium, just above Poupart's ligament, through an old scar from a wound made for the removal of some glands 18 months ago. The symptoms led to a diagnosis of hernia, but at the operation an abscess was reached and several ounces of thin pus evacuated. The cavity could be traced with the finger downwards towards the pelvis, and backwards and upwards towards the lower lumbar vertebræ, but no bare bone was felt. A drainage tube was inserted, and 2 days later some bismuth mixture was injected through the tube. This was not very satisfactory, and another injection was made 4 days later after the tube had been removed. The bismuth penetrated between the 4th and 5th lumbar vertebræ almost, if not quite, to the other side. The rest of the cavity has apparently closed up in the 10 days since the operation. There was no symptom, objective or subjective, pointing to spinal caries, and I do not think that any probing could have given us so clear an idea of the extent of the disease as does this bismuth shadow. Whether it will end in a cure, as Beck asserts, we must wait to see.

These cases are typical of the kind of chronic abscess cavity that is most commonly met with. Most of these abscesses have unfortunately been opened before they come under the surgeon's care. They have been dressed and probably poulticed till the family doctor and the patient are both tired, and there is usually no attempt at healing; but the patient has suffered a great loss of flesh during the months that the sinus may have been discharging. The usual ending of such patients after repeated operations—septic infection and maybe amputation—is not a credit to modern surgery. The operations have, in the majority of cases, probably failed to reach the true focus of the disease, and for that reason alone may have been failures, but it is more likely that the constant probing and dressing of the open wound by not always aseptic instruments or fingers, and the consequent multiple infection, has led to slow but steady failure in the health of the patient. These abscesses, as every surgeon knows, are not so harmful to the patient before they open, unless they interfere with some vital organ or part involving frequent movement. If then, after evacuating the pus, we can help them to heal, without at the same time exposing them to a new infection, we shall be at least doing some benefit to the patient. This has been the idea of iodoform and other antiseptic injections. Some of these have led to poisoning; but is the bismuth always safe?

In one of my own cases, which I have published elsewhere,[2] absorption was so rapid as to set up an acute bismuth poisoning. I was not aware at the time that the mixture had been made up on this occasion with carbonate instead of subnitrate of bismuth. This may have been the cause of the acute poisoning, for Meyer[3] pointed out that the bismuth oxide and bismuth carbonate were more quickly absorbed from experimentally-produced wounds than was the bismuth subnitrate. Kobert[4] also produced poisoning in 3 days by injecting airol, an organic bismuth compound. It is not that these compounds are impure, but simply that they are more readily absorbed. Is it not possible, from the selective action of nitric acid on tubercular and other pathological tissues, that the subnitrate, when acted on by the organic acids, gives up its nitric acid, which attacks the tubercular wall of the cavity and forms a barrier to absorption and to further growth of the tubercle bacilli? That this is the case one would conclude from the speedy improvement that is noticed when treating ulcerating lupus patches with either the pure nitric acid or the acid nitrate of mercury. It would not be safe yet to conclude, as Beck does, that all tubercular

cavities, whether in bone or in soft tissues, can be cured by this method; but if the injection can be made with safety, and a plate taken, both surgeons and patients would be saved many useless operations, and when it has been decided to interfere, the sinus could be traced to its origin and the damaged tissues removed completely. There is no need to risk absorption by leaving any of the emulsion in a cavity under tension. Should poisoning show itself, removal of the bismuth would probably stop dangerous absorption, and, at any rate, judging from the cases so far recorded, the fatalities would be infinitely fewer from this method than what at present follow the usual treatment of tubercular abscesses.

References.

[1] Beck, *Archives of the Röntgen Rays, &c.*, June and August 1908.
[2] Don, *B. M. J.*, 28th November 1908.
[3] Meyer, *Arch. f. Exp. Path. u. Pharm.*, Bd. xx.
[4] Kobert, *Intoxicationen*, p. 386.

SURGICAL BEARINGS OF TUBERCULIN.[1]

By R. W. PHILIP, M.A., M.D., F.R.C.P.,
Physician to the Royal Infirmary, and to the Royal Victoria Hospital for Consumption, Edinburgh.

The frequency of tuberculous lesions in surgical wards is well known. Visit a surgical clinique anywhere and any time—one of the striking features is the number of patients suffering from one or other manifestation of tuberculosis. The tuberculous lesions are of different grades. Many are fortunately at a stage when the injury is localised and comparatively slight. In others the disturbance has been allowed to advance until the extent of involvement is great and its limits are less readily defined. In many there is associated constitutional prejudice. Of the group of advanced cases it is a truism to affirm—but the truism is of much significance—that, at one time, the lesions were comparatively slight and local.

Prolonged experience in the use of tuberculin for a great variety of tuberculous conditions emboldens me — physician though I be—to accept the President's invitation to take part in the work of the surgical section of the Congress. Tuberculin

[1] Being paper communicated to the Surgical Section of the International Congress on Tuberculosis, Washington, 1908.

plays a double *rôle* in relation to so-called surgical tuberculosis. Its influence is conspicuously conservative. This is effected by its remarkable power of limitation of tuberculous disease.

In this sense it may, on the one hand, anticipate surgical interference, and even render such interference unnecessary. Or, on the other hand, it may prepare the way for surgical interference by defining and limiting the area involved. Thus, for example, in the case of glandular tuberculosis, where one or several glands are alone enlarged, the timely use of tuberculin, with careful dosage at suitable intervals, may lead to resolution of the process and prevent the need for surgical interference. I have had such experience again and again. On the other hand, there are cases where many glands are simultaneously involved and infection extends deeply, and the clinical picture produces the uncomfortable impression that, if surgical interference be undertaken, either the surgeon will have to stop half-way and admit failure, or the knife will have to pass deeply and undertake dissections, the limits of which are dubious. I have in my mind cases where not several glands only were involved, but where so many were involved as to be practically uncountable, and where several had already been treated surgically with only partial success, in which brilliant results were obtained by the use of tuberculin.

I recall one case in particular where the number of glands was uncountable, and where sinuses, following, in part, surgical interference, and, in part, spontaneous rupture, formed an almost continuous chain round the front of the neck, with ugly discolouration of the adjacent skin surfaces. Within six months from the commencement of treatment by tuberculin, all the sinuses healed, the glandular enlargement practically disappeared, and, save for a few scars, the skin had assumed its normal aspect. Contrariwise, I recall cases where tuberculin was either excluded from the first, or later, after its use had been undertaken, and where, through haste to obtain result, operation after operation was performed, only to be followed by disappointment.

In many difficult cases the most favourable result is obtained by a judicious combination of tuberculin treatment with surgical interference. In presence of enlarged glands, I recommend that treatment be commenced with tuberculin in minute doses at carefully regulated intervals. I shall refer to the details of procedure presently. In some instances the employment of tuberculin may alone suffice to cause resolution. Even when

many glands are involved, tuberculin will lead to resolution of the majority, more especially those located at the greatest distance. If suppuration be determined in one or several glands, surgical interference for the relief of this may be undertaken, the use of tuberculin being maintained. It is remarkable how rapidly discharge ceases in such circumstances, and a healthy cicatrisation follows. Tuberculin is no less serviceable in relation to localised tuberculosis of bones and joints. In all cases, but especially in the osseous and articular group, advantage seems to be obtained by the introduction of tuberculin directly within the affected area.

There remains for consideration a large group of serious conditions in which frequently tuberculin may replace surgical interference entirely. This group includes two classes—

(*a*) Certain obscure cases where localisation of lesion is not exact, or where operative procedure is doubtful or has been fruitless.

I might cite several examples. For the present, it may suffice to record one striking case which has recently been under my observation. The patient, a young lady of 30, came to me three years ago on account of a distressing discharge of pus *per rectum*, amounting to some 8 to 10 ounces daily. The discharge had continued for almost four years. During that time she had had the best surgical advice. Two surgical operations had been undertaken by way of the rectum. More recently a laparotomy had been performed with a view to clearing up the diagnosis and effecting a cure. In spite of such heroic measures, carefully carried out, with the addition of long-continued rest on open-air lines, the discharge, when I first saw her, was, she informed me, as great as ever. Examination showed the traces of the surgical interference not merely in the superficial scar, but unfortunately also in a cicatricial narrowing of the rectum, which was the cause of much difficulty in defæcation. High up, as far as the finger could reach, there was felt a considerable boggy area in relation to the posterior (or sacral) aspect of the rectum. Pressure over this area caused pain and bleeding and discharge of pus. It was to this area that the rectal operations had been especially directed.

Concluding that the lesion was of tuberculous nature, and having regard to the complete lack of success of repeated surgical interference, I proposed treatment by tuberculin. The result was remarkable. After the first two or three injections, improvement was noted by the patient. Within three months the discharge of pus, which had lasted almost four years, was

greatly reduced, and at the end of six months had entirely disappeared. The patient's general condition improved simultaneously. For two years she has been free from any trace of discharge, and, apart from the distressing consequences of the operative interference (rectal cicatrisation and hernial bulging of the abdominal wall), has been well.

(*b*) Tuberculin may similarly replace surgical interference in a number of admittedly inoperable cases. Here, again, I might cite a variety of examples, but content myself with reference to extensive genito-urinary tuberculosis, with involvement of kidneys, bladder, and presumably other parts, where radical surgical interference would be impossible. In such cases the effect of careful and continued use of tuberculin is very remarkable. I have had a large series of such cases, and the net result has been satisfactory. In every instance, so far, improvement has been achieved, and, in many, the improvement has amounted to cure. Thus, I have had cases where life was made miserable day and night by frequency of micturition, vesical relief being called for every hour or more frequently, and where, after a dozen or two injections, micturition was restored to normal order. In other cases large discharge of pus has been reduced to a minimum, or been made to disappear, and likewise tubercle bacilli have disappeared or been greatly reduced.

In such cases, even if absolute cure be not effected, it is of vast significance to the patient that at least the more urgent symptoms, which make life hardly worth living, should be removed. The relief reported by many patients is most satisfactory.

In other affections, where the leading symptom is traceable to tuberculous involvement, *e.g.* the distressing dysphagia which accompanies tuberculous involvement of the epiglottis, I have confidence in recommending the use of tuberculin as likely to be followed by the reduction or disappearance of the symptom, even if actual cure be not always registrable.

It is impossible to enter at length, on the present occasion, into minutiæ of treatment, but a single word as to varieties of tuberculin and their dosage may be serviceable.

Of the various tuberculins, I have used several, including Koch's original tuberculin, Koch's T. R., and, more recently, Béraneck's tuberculin. The last named seems to me worthy of special consideration. Each case requires to be judged *per se*, but the general plan of treatment is uniform. It has been my rule to commence with minute doses—thus, of Koch's original tuberculin,

0·0001 gram.; of T. R. tuberculin, $\frac{1}{5000}$ to $\frac{1}{2000}$ milligram.; and of Béraneck's tuberculin, 0·1 c.c. of a 1 : 100,000 solution. Dilutions are made with normal saline solution. Injection is repeated at intervals from three to fourteen days, according to the nature of the case and the effect produced. The effect is gauged by careful record of temperature, pulse, general condition of patient, and local manifestations. Although my observations have been controlled in many instances by daily estimation of the opsonic index, I do not think this is necessary. I am satisfied that the amount and frequency of dosage may be regulated sufficiently—indeed, regulated fully as well—by means of more readily available clinical evidence.

My practice has been to commence with the smallest dose that seemed likely to be effective, and thereafter to proceed with treatment very gradually at sufficiently wide intervals. It is commonly desirable to repeat the same dose on more than one successive occasion, so as to be sure that no reaction has been missed. Thereafter, the dose may be progressively increased in similar fashion until a considerably larger dose is attained.

It is especially important to commence with small doses when the surgical lesion is internal, or, if external, is associated with visceral tuberculosis, *e.g.* pulmonary, or when, although no internal lesion is determinable, there is much constitutional prejudice.

When, contrariwise, the surgical lesion seems entirely external, it is permissible to commence with larger doses, the same precaution being taken in respect of clinical observation and progressive graduation of dosage.

Sometimes, when the disease is certainly external, direct introduction of tuberculin into the diseased area is to be recommended. In such cases, also, the stronger solutions may be used. Thus, of Béraneck's tuberculin, I have commenced with $\frac{1}{10}$ c.c. of 1 : 100. After injection the affected area must be carefully observed. If there is trace of local reaction, no further injection is made until this has disappeared. If, as commonly happens, all trace of reaction has disappeared at the end of a week, the same dose is repeated. If no local reaction has taken place, or the reaction has been slight, the dose is increased $\frac{1}{10}$ c.c., and so on gradually, a pause being always made in presence of definite reaction until every trace of reaction has disappeared.

THE TREATMENT OF PERFORATING ULCER IN THE IMMEDIATE VICINITY OF THE PYLORUS BY EXCISION IN THE LONG AXIS OF THE VISCUS AND SUTURE IN THE TRANSVERSE AXIS.

By J. W. DOWDEN, F.R.C.S., Assistant Surgeon, The Royal Infirmary.

An experience now of fifteen cases of perforating ulcer of the stomach or duodenum, has convinced me that the best treatment is that of excision of the ulcer; and for two reasons: firstly, the ulcer is got rid of—to a great extent at least; and secondly, the healthier tissue exposed is much more suitable for rapid and safe suturing.

In the body of the stomach such treatment is as a rule easily carried out, and no encroachment on the lumen will take place if the sutures are inserted so as to produce a vertical cicatrix and not a transverse one; but when the perforation is situated in that common area for such catastrophes—the neighbourhood of the pylorus—this method of dealing with the ulcer is apt to be associated with a degree of constriction that calls for the performance of a gastro-jejunostomy, and consequently involves that inevitable loss of time which may prove the turning point between a recovery and a death.

During the last year I have treated five cases of perforation near the pylorus in the manner presently to be described. Four of these cases are now perfectly well—two operated on nine, one seven, and one four months ago. The fifth case, a most difficult one, required the performance of a gastro-jejunostomy on the third day after the primary operation, and now—nine months from the date of the perforation—there is some slight return of the old symptoms.

The mode of operation carried out in these five cases is as follows:—

The abdomen is opened to the left of the middle line, and the fluid in the abdominal cavity mopped up till a less interrupted view of the parts can be obtained. When the ulcer has been located, gauze is packed around the area, and the affected portion of the viscus is brought as near as possible to the surface, adhesions if necessary being freed. In order to carry out the subsequent procedure, it is essential to obtain free and easy access to the part, and at times assistance can be obtained from placing a sand bag under the back. One blade of a pair of straight blunt-pointed scissors (Mayo's are excellent) is now pushed through the per-

foration, and a cut is made in the transverse axis of the canal, well through the pylorus. The scissors are now turned round, and a similar cut is made in the opposite direction. The total wound, including the ulcer, is, roughly, one to one and a-half inches in length. The forefinger is now introduced in order to estimate the size of the opening, both through the pylorus and also into the stomach; the finger should pass easily in both directions, and if it does not, a further snip with the scissors should be made through the constricted part. The edges of the ulcer are now cut away with a pair of curved blunt-pointed scissors; about $\frac{1}{4}$ of an inch from the margin of the perforation all round was the average amount removed in the five cases. The appearance now presented is that of an oval opening in the long axis of the part, with an incision extending from each end of the oval opening also in the long axis. The upper and the lower portions of the oval are now seized with fine tenaculum forceps, or tractor sutures are introduced. Drawing on these tractors the transverse wound is converted into a vertical, somewhat diamond-shaped opening. The sutures are now introduced so as to produce a vertical cicatrix, after the manner of a pyloroplasty. All three coats are stitched with iodised catgut and an inverting linen thread row of Lembert's sutures. The size of the resultant opening between the stomach and the duodenum is now gauged by means of the finger and thumb.

The contaminated peritoneum is now dealt with. In my five cases, a suprapubic drain was introduced and the peritoneal cavity freely and systematically flushed with hot saline solution. The after treatment consisted in the administration of continuous saline solution per rectum with the patient in the propped-up posture.

In the case which failed, the region of the ulceration was so fixed by old adhesions that it was found a matter of the greatest difficulty to insert the sutures, and the constriction produced required the later performance of a gastro-jejunostomy.

It is needless to say in conclusion that it is impossible to treat all cases in this manner; some are too unapproachable, and at the best even difficult to close; but that four out of five consecutive cases were so dealt with points to the possibility that a fair proportion will lend themselves to this method of operation and obviate the need for gastro-jejunostomy, a matter certainly of importance when an emergency has to be dealt with by one not skilled in the performance of the latter operation, not to mention the increased time that is needed.

PULMONARY ABSCESS AND PNEUMOTHORAX FROM URINARY INFECTION.

By A. I. SHEPHEARD-WALWYN, M.B.,
House-Physician to the Paddington Green Children's Hospital, late Resident Physician and Resident Surgeon to The Royal Infirmary, Edinburgh.

Septic affections of the respiratory organs are by no means uncommon as sequels of abdominal lesions; the connecting link in such cases is most frequently sub-phrenic abscess, which received most thorough investigation some years ago at the hands of Leith.[1] Some instances are not easy to elucidate, as the different stages of the disease remain obscure. In the hope that it may prove useful, the case of a patient recently under the care of Dr. Gibson, when I was his house-physician in the Royal Infirmary, appears worthy of being recorded.

The case is of peculiar interest, both as regards its causation and the course it ran:—

Robert B., aged 26, single; by occupation, a clerk. He was recommended to Dr. Gibson's wards on 21st November 1907 as a *case of acute nephritis*, but his only complaint was weakness.

Excepting that his mother probably died as the result of some malignant abdominal trouble, his family history is good. His work is not heavy, while feeding and ventilation, both in the office and at home, are satisfactory. He says he has always been very temperate in every way and denies venereal trouble.

He was free from illness of any kind as a child, and his good health received no check till the beginning of February 1906. During the early morning of 5th February he woke up with severe pain in the abdomen. He felt that he desired to pass water, but found himself unable to do so. He immediately called in his doctor, who found that his bladder was distended, and unsuccessfully attempted to pass a catheter. The same evening his penis and scrotum became swollen, and he was admitted into Professor Chiene's wards, suffering from rupture of the penile urethra and consequent extravasation of urine. The cause of this rupture remains obscure. Perineal urethrotomy was performed, and Sprengel drainage used. The urine was clear and contained no albumen. He was discharged as cured on 14th April 1906, and had no further trouble till the beginning of October 1907. He then gradually lost his appetite, felt himself getting weak,

[1] Leith, *Edinburgh Hospital Reports*, vol. iii. p. 121.

and noticed that his work was becoming more and more of a burden to him.

At this time he consulted his doctor, who told him his stomach was out of order and prescribed for him accordingly. The weakness progressed, however, and he noticed that he was rapidly getting thinner and losing weight, until, at the end of October, he had to discontinue his work. A week later he discovered that his water was becoming thick and muddy, that it had an offensive odour, and also that he required to pass it with increasing frequency. At the same time he became troubled with profuse perspirations, especially in the early mornings. He again saw his doctor, who recommended him for admission to Dr. Gibson's wards. On admission (21st November 1907), patient lay easily on his back, was sanguine and cheerful, and appeared but little distressed. He, however, looked very ill, and presented the signs of cachexia. He was, naturally, a sparely-built man, and only stood 5 ft. $3\frac{1}{2}$ ins. His whole body was extremely emaciated, and practically took the outline of the bony skeleton.

He looked pale and there was a faint malar flush. His eyes were bright and prominent, the pupils widely dilated, and the sclerotics very blue. The lips, gums and conjunctivæ were markedly blanched, the cheeks sunken, and the nose sharp and pointed. His skin felt hot and dry.

His weight at this time was 6 st. $4\frac{3}{4}$ lbs.; his temperature 102°; pulse, 120 per minute; and respirations, 26 per minute.

Urinary System.—Patient complained that he had, for the past fortnight, been compelled to pass his water about every 2 hours, day and night, and that, concomitant with this frequency of micturition, he had noticed his urine to be very thick and muddy. He had not had pain or discomfort connected with micturition.

On examination the urine (catheter specimen) showed—A specific gravity of 1015, a strongly alkaline reaction, a very large quantity of pus. The urine in the specimen jar was very muddy, and after being allowed to settle for 6 hours showed a deposit which occupied the lower $\frac{2}{3}$ of the jar. This deposit was composed almost entirely of pus. Microscopical examination of the urine showed also the presence of triple phosphates, with numerous streptococci and staphylococci. No other organisms were found and no blood or tube casts were present. Tubercle bacilli were repeatedly looked for, but were never at any time found.

The quantity of urine being passed at this time was about 50

ozs. daily, and the amount of urea 6 grs. per oz. or 1·25 per cent.

Cultures also showed growths of streptococci and staphylococci.

Respiratory System.—Respiratory rate was 26 per minute. Patient was not troubled with cough or spit, and never had been. The chest was spare and poorly covered, the appearance of the ribs testifying to the extreme degree of emaciation. There was, however, no deformity, the general contour of the chest being good.

Movement with respiration was satisfactory, and equal on the two sides.

Vocal fremitus was slightly increased over the whole chest, doubtless on account of the thinness of the parietes. As might be expected, a slightly hyper-resonant percussion note was obtained in all areas, the breath sounds were harsh, and the vocal resonance increased; but, though the chest was very carefully examined, the lungs appeared to be quite sound in their entirety.

Circulatory System.—There was no complaint of breathlessness, palpitation or giddiness.

Præcordia well shaped, though small. The cardiac impulse was visible in the 4th and 5th interspaces, 3 ins. to the left of midsternum, and carotid pulsation was evident in the neck. There was slight enlargement of the heart, the apex lying behind 6th rib, $4\frac{1}{4}$ ins. to the left of midsternum. On auscultation, the heart sounds were loud and thin; they were closed, excepting for a soft systolic blow in the tricuspid and pulmonary areas.

Pulse.—The vessel walls yielded normal resistance, and showed no thickening. The systolic pressure in the brachial vessels was equal to 130 mm. Hg. The rate was 120, and the rhythm regular. The radial pulses were synchronous.

Alimentary System.—The teeth in both jaws were much decayed, and the gums in a septic state. The tongue was clean, moist and healthy looking, and its tone good.

Until the last few weeks patient had always taken his meals regularly and heartily, but lately he had cared very little for his food. There was no abdominal discomfort, and there had never been any vomiting. During the past month he said he had been considerably troubled with diarrhœa, the bowels moving 3 or 4 times daily. The abdomen appeared tense and full, and its walls were thin and showed only slight respiratory movement.

There was a good deal of rigidity of the abdominal walls, and the abdomen gave a boggy, resistant sensation to the hand. No thrill could be made out.

The lower edge of the liver was palpable 2½ ins. below the costal margin in the right mammary line. The surface of the liver appeared smooth and firm, and palpation over it caused slight discomfort. The spleen was not palpable.

A tympanitic percussion note was obtained over all the abdomen, and there was no dulness in the flanks. The stomach was of normal dimensions and not displaced. The liver was found to extend from upper border of 4th rib to 2½ ins. below the costal margin—in the right nipple line, and it reached 2 ins. below the xiphi-sternal articulation in the middle line.

On rectal examination no enlargement of the prostate was made out, and nothing abnormal found.

Nervous System. — The muscles showed much wasting and irritability over all the body.

The tendon responses were all very lively, and there was a slight degree of ankle clonus on both sides.

Babinski's sign was absent. There was no inco-ordination and no tremor.

Nystagmus was present on both sides.

The pupils were equal and regular, and reacted briskly both to light and accommodation.

The optic discs and fundi were perfectly healthy.

Hæmopoietic System. — The spleen was enlarged but not palpable.

There was no enlargement of any of the lymphatic glands.

The blood showed:—

Hæmoglobin	60 per cent.
Erythrocytes	3,200,000
Leucocytes	15,000

Examination of a blood film showed the percentages of leucocytes to be as follows:—

Polymorphonuclears	77
Lymphocytes	18
Large Mononuclears	4
Eosinophiles	1

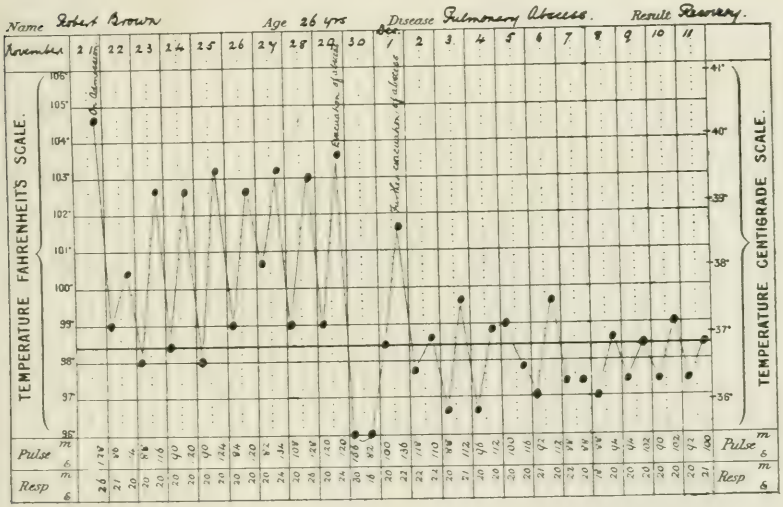
Nothing abnormal was seen in the erythrocytes.

Progress.—For 4 or 5 days after admission his temperature continued to swing between 98° and 103°, being at its height about 11 P.M.; with this, the pulse frequency was remitting between 90 and 120. Calmette's ophthalmo-reaction was tried on two occasions, with negative results. The patient still complained of

nothing excepting weakness. He had no diarrhœa after admission. The lungs were repeatedly examined, but gave no indication of disease.

The amount of urine remained about 50 ozs. daily, but the quantity of pus varied very greatly from day to day.

From the facts obtained up to this time we were forced to regard the case as being probably one of pyonephrosis, and we therefore decided to have the flow from the ureters separated. We were about to get this done, however, when further developments prevented it.



On the night of 27th November, at 11 o'clock, the chart registered the patient's pulse-rate at 136, with a temperature of 103·4°. The patient said he was very comfortable, but that he occasionally felt a slight pain below the right shoulder blade. The chest was again examined, and percussion gave a circumscribed area of dulness, about the size of a crown piece, in the 8th and 9th spaces, below and just external to the angle of the right scapula. The breath sounds over this area were absent, and the vocal resonance diminished. No pleuritic friction was made out and patient had no cough. The following day (28th November) the area of dulness was more marked, and, as it seemed that we had now to deal with either an abscess in the lung or a localised empyema, exploratory puncture was performed in 8th interspace, just external to the angle of the right scapula, and about 5½ (half a

drachm) of pus withdrawn. As it seemed evident that the pus was only found after the needle had penetrated the lung tissue, we felt confident that the condition was one of abscess in the lung.

The pus withdrawn showed a pure culture of streptococci, That night the temperature again reached 103°, and patient perspired very freely. He still had no cough and no respiratory discomfort, and still no pleuritic friction was evident. Up to this time the leucocyte count had remained steady at about 15,000, it was now 18,000. Next night (29th November) at 11 P.M. patient's temperature had risen to 103·6°, but otherwise he appeared not in the least distressed. At midnight he suddenly took a violent fit of coughing, and brought up 1½ pints of pure pus. He nearly succumbed to asphyxia, and at 12.30 A.M. he was quite collapsed, his pulse being soft and running at 160 per minute, his temperature 97·4°, and his skin very cold. He was surrounded by hot bags, and given hypodermic injections of strophanthin (gr. $\frac{1}{100}$) and strychnine (gr. $\frac{1}{30}$) alternately every 2 hours. He improved a little after this, and by 1 A.M. the temperature had risen to 98·6°, though the pulse was still running at 156. During the remainder of the night patient coughed very little, and only brought up about another ½ oz. of pus. At 4 A.M. his temperature registered 102°, but both temperature and pulse then fell till, at midday, pulse-rate was 90 and temperature 97°.

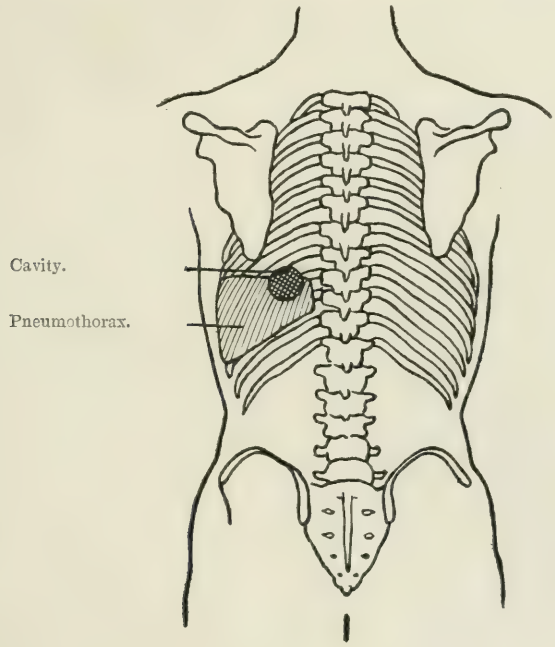
The pus coughed up was yellow, thick, of uniform consistence, and had very little odour. It was found to contain a few shreds of elastic tissue, but no T. B. were discovered in it.

That night (30th November 1907) the temperature never rose above 98°, and the pulse-rate remained below 100. The area of dulness remained as on the previous night, and no fresh physical signs could be detected in the chest. Patient took plenty of nourishment and felt quite easy. He coughed very occasionally, and brought up a small quantity of muco-purulent sputum.

The following day (1st December) the temperature gradually rose till, at 11 P.M., it registered 101·6°, with a pulse-rate of 140. About half an hour later patient took another fit of coughing, not so severe as the previous one, and this time he brought up 4 ozs. of pus, similar in appearance and character to that expectorated during the first attack. He slept well after this and required no extra stimulation.

The following morning (2nd December) his chest was again examined, and the physical signs were found to have altered entirely. The area of dulness had completely disappeared, and

was covered and overlapped by an area of tympanicity. Very faint amphoric breathing was heard over this area, and vocal resonance was much diminished. Hippocratic succussion was present and the coin test positive (see chest charts for areas of tympanicity and dulness). Above this tympanicity (see chart) was an area giving a dull boxy note to percussion. Over this area the breath sounds were cavernous, and pectoriloquy was present. Immediately above this area, in the 5th and 6th interspaces, a few scattered, medium-sized crepitations were present



both with inspiration and expiration. It seemed natural to suppose, therefore, that the first coughing attack had been caused by the abscess rupturing into and being partially evacuated by a bronchus, and that the second attack had ruptured the abscess into the pleural cavity and produced a pyo-pneumothorax. From this time onwards the temperature settled, continuing to swing slightly, but at a much lower level, and rarely rising beyond 99°. The pulse remained about 100, and respirations fairly steady at 20. The leucocyte count varied very little, being always between 14,000 and 16,000.

During the following week patient's general condition markedly

improved. The cough and spit vanished, he relished his food, and both looked and felt remarkably well. The pneumothorax gradually became absorbed till, on 14th December, there was no sign of it. The pus had been slowly disappearing from the urine also, and was now only present as a trace.

On 15th December, as there was marked dulness over the site of the old abscess, the lung was again explored and ℥i of pus withdrawn. The following morning the pneumothorax was again present and to the same extent as previously. This again was gradually absorbed, and on 26th December there was no sign of it. During this time patient had again been making headway. His weight had increased by 4 lbs., he had no cough, had ceased to sweat at nights, and during the last fortnight his temperature had only once exceeded normal limits. His urine also contained only a scanty trace of pus.

At the same time, however, during the last week dulness at the base of the right lung had become more and more evident, and over this dull area the breath sounds had vanished and vocal resonance was much diminished. As these signs all pointed to the presence of pus in the pleural cavity, an aspirating needle was inserted at the level of 10th interspace and 3 ozs. of pus withdrawn. The pus so obtained was found to be no longer streptococcal but to contain also staphylococci and bacilli coli.

The right base remained very dull to percussion, and we had decided to call in surgical aid when, on 1st January, the pneumothorax again made its appearance. It vanished more rapidly this time, and by 7th January was quite absent, only to reappear again on 9th January in its original position. The air had all gone again by 13th January, but the tympanitic area was once more evident the following day.

During the previous 3 weeks patient had apparently improved, and had increased another 5 lbs. in weight, though his temperature had shown more of a swing than previously.

On 19th January he was removed to Mr. Caird's wards, as it seemed evident that surgical interference was necessary.

On 21st January, under cocain and adrenalin, Mr. Caird resected a portion of 10th right rib. The pleural cavity was opened into, and a small quantity of pus escaped. Mr. Caird then passed his finger into a small cavity in the lung and inserted a couple of drainage tubes into it.

During the following 2 days patient had rather more cough and slight hæmoptysis; his wound was dressed twice daily and a

moderate quantity of pus drained away. The haemoptysis then ceased, and after 25th January the cough troubled him no more. The discharge diminished, his temperature chart remained fairly level, and his condition continued in every way satisfactory till 4th February, when his temperature started to rise and continued to do so till 8th February, when it reached 103·4°. At the same time he complained of headache, running from the nose and shivering. He had no cough, and the leucocyte count remained at 9000. The assumption, therefore, was, that this was merely an influenzal attack, this being prevalent in the wards at the time; it rapidly subsided under the influence of quinine and sodium salicylate.

By 9th February the discharge from the operation wound had practically ceased, the cavity in the lung had closed up, and the lung itself was expanding well.

Patient rapidly picked up strength and was allowed up on 11th. On 12th the tubes were removed, and on 14th he was discharged from the wards and sent off to the country.

On 10th March patient returned to the ward for one night for the sake of further examination. His appearance had greatly changed since he left hospital. His whole frame had filled out considerably, his cheeks had taken on a healthy flush, his pupils were only moderately dilated, and his features had lost that sharp, pinched look which characterised them previously. He said that he had felt himself to be gaining strength daily since he went to the country, that he was eating heartily and sleeping well, that he had no cough, and that he never now perspired at night. He had been taking a little exercise every day, and said that he could now walk 1½ miles with ease and without feeling short of breath. His wound was being dressed by a district nurse, and patient said that the dressings every second day were practically clean. He also stated that he had now no frequency of micturition and that he had had no further diarrhœa.

His weight at this time was 7 st. 6 lbs., being an increase of 7 lbs. since the previous record. His temperature during the 30 hours he was in the ward remained steadily between 98 and 98·4°, and his pulse between 84 and 92.

On examination of the chest no unilateral flattening was found, nor was there noticeably diminished respiratory movement on the right side. The respiratory movement at the bases was 2 inches.

On palpation, vocal resonance was diminished at the right base, elsewhere it was slightly increased.

The percussion note was somewhat hyper-resonant over the whole chest, excepting below the 9th right rib posteriorly, where there was marked dulness. Over this dull area the breath sounds were very faint, though vesicular in type, and the vocal resonance was much diminished. There was also well-marked friction, both with inspiration and expiration. There were no accompaniments elsewhere, and there was now no sign of a cavity.

The pulse was good and regular, still rather rapid, being 90, and it had a systolic pressure of 120 mm. Hg.

The abdomen was now perfectly flaccid and offered no undue resistance to palpation.

The hepatic enlargement had almost entirely disappeared, the lower border of the liver lying half an inch below the costal margin in the right nipple line. The kidneys were not palpable.

The blood had improved very greatly and showed:—

Hb.	90 per cent. per cm.
R.B.C.	4,790,000 ,,
W.B.C.	7,400 ,,

Film:—

Polymorphs	63 per cent.
Lymphocytes	29 ,,
Large Mononuclears	4 ,,
Eosinophile	3 ,,
Mast Cells	1 ,,

The urine still showed a trace of pus. It was neutral in reaction and had a specific gravity of 1016. Patient was passing about 450 grs. of urea per day. The chest condition, therefore, seemed highly satisfactory, and our only concern now lay in the origin of the pus contained in the urine. He was unable to stay in the ward longer at that time owing to business pressure, and up to the present time it has not been possible to get him back to the hospital with a view to having his ureters separated, as he has been feeling so strong and well that he thinks further interference unnecessary. I met the patient in the street at the beginning of September. He then looked in excellent health, and his account of himself bore out his appearance. He was attending fully to his business, and told me that he now weighed 8 st. 4 lbs.

The history of this case leaves no doubt that the condition was one of true abscess in the lung, but the cause of the abscess is not equally clear.

It is unfortunate that we were unable to induce the patient to submit to separation of the ureters, as we are left in the dark as to whether the pyuria was due to affection of both kidneys or only one, and, in the case of its being unilateral, as to which one was the site of the trouble.

It seems not improbable, however, that the lung condition may have been secondary to the pyonephrosis by direct spread, through diaphragmatic perforation of a sub-phrenic abscess resulting from a perinephritic abscess.

Pyæmic or metastatic abscesses are almost invariably multiple, and rarely attain a large size, and there is nothing in this case to suggest an embolic process. Again, the first sign of trouble in the lung was that of actual abscess formation, so that we cannot here consider the condition secondary to earlier lung disease.

Several instances have been reported of abscess in the lung being secondary to a ruptured gastric ulcer and to perforation of a sub-phrenic abscess, and it therefore seems not unreasonable to suppose that the condition, in this case, may have been brought about by a perinephritic abscess becoming sub-phrenic and later perforating the diaphragm.

As mentioned above, when the patient first came into the ward, the lower edge of his liver was considerably displaced downwards. Although, at that time, we thought that this was probably to be explained by cloudy swelling of the liver cells resulting from acute toxæmia, is it not possible that the real cause was to be found in a sub-diaphragmatic abscess displacing the whole organ downwards?

A DEMONSTRATION COUCH FOR CLINICAL TEACHING.[1]

By J. EASON, M.D., F.R.C.P.,
Assistant-Physician, Leith Hospital.

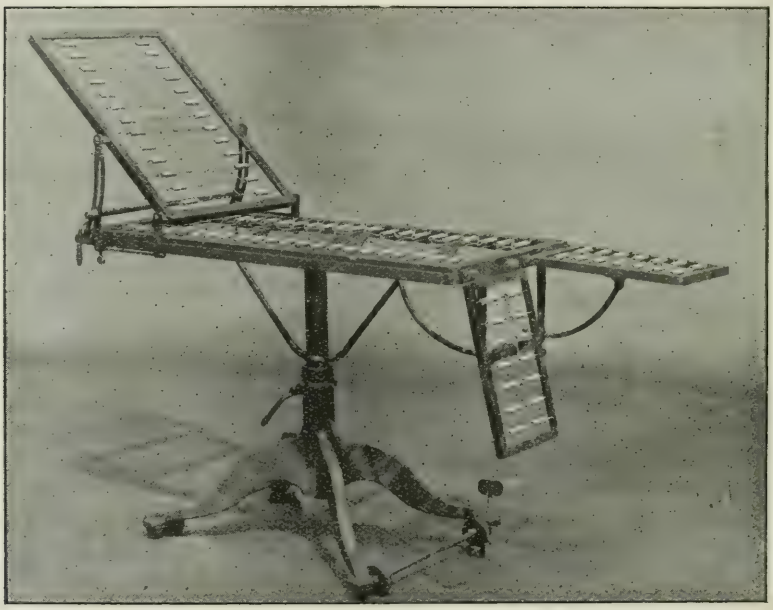
It will be remembered that most anatomical theatres are provided with a demonstration table which can be so rotated that onlookers from all parts of the theatre may be able to see to the best advantage what is being shown by the teacher.

The plan is one which, being esteemed of much practical utility both by teacher and student, should accordingly have equal advantages if adapted to clinical teaching. A demonstration couch

[1] Shown at the Edinburgh meeting of the Association of Physicians, June 1908.

constructed on this plan may be rendered of the greatest usefulness by introducing other features which follow the general lines of an ordinary operating-table.

I have therefore suggested its construction in the following way:—The frame is supported by a central pillar which revolves on a four-footed base so that the frame may be rotated or fixed in any desired position by a turn of a screw. A hinged back-rest is added so that the patient may be propped up at any angle required for facilitating the demonstration of abnormalities in



the regions of the head, neck, arms, thorax and abdomen. In order that the back-rest may suit patients of different stature it can be adjusted to any point along the length of the table.

Still following the lines of the operating-table, hinged leg-rests have been adopted. The advantage of this arrangement is that one may thereby demonstrate the condition of the legs and of the reflexes more easily, more satisfactorily, and with a minimum of disturbance to the patient.

The familiar metal plates which compose the flat surface, the back-rest and the leg plates of an operating-table are here replaced by wire mattress work. When in use the wire mattress

work is covered with upholstered cushions which have button attachments to the frame and are therefore easily detachable.

To provide for mobility so that the couch may be wheeled to the bedside of the patient and thence to the theatre or other class-room, the four-footed base is on wheels of sufficient diameter. These wheels work on fixed axles, so that when a patient is under examination the couch cannot be pushed away by the examiner leaning against it. By a simple arrangement two of the four wheels can be lifted off the floor, ensuring absolute immobility whenever desired. The height of the table is such that much stooping is rendered unnecessary, and its breadth is no more than that of a fairly broad operating-table. It is therefore unnecessary for the physician to adopt any constrained position when conducting his examination—a circumstance which should conduce to accurate work.

My thanks are due to Dr. G. A. Gibson for encouraging me to bring this scheme for a "clinique couch" to the notice of clinical teachers, and for a practical suggestion to which effect has been given in its construction.

OBITUARY.

DOUGLAS ARGYLL ROBERTSON.

ALTHOUGH he had made his home in Jersey during the last five years he made at least one annual return visit to Edinburgh, and on the last of these he looked so well and vigorous that his many friends and admirers looked forward to seeing Argyll Robertson for many years to come, so that the news of his death in India on the 3rd January came as a great shock to everyone.

He was born in Edinburgh in 1837—the son of Dr. John Argyll Robertson, a surgeon and lecturer in the Medical School in the first half of last century, whose term of Presidency of the College of Surgeons in 1848 immediately preceded that of Syme. It is interesting to know that he took special interest in ophthalmic surgery, and was one of the founders of the Eye Dispensary.

He was educated in Edinburgh and in Germany; he studied medicine in Edinburgh and St. Andrews, and took his M.D. at St. Andrews in 1857. In the same year he was appointed house-surgeon in the Royal Infirmary, one of his co-residents being his life-long friend, and for many years his next-door neighbour in Charlotte Square—the late

Thomas Grainger Stewart. He pursued his medical studies abroad, particularly in Berlin, where he came under the spell of Von Graefe, then at the height of his reputation and influence. It was Von Graefe who led the van in the remarkably rapid progress ophthalmology was making at that time, and to his scientific attainments and operative skill were added a singular personal charm and a rare power of imparting his enthusiasm to others. It was after working under Von Graefe, of whom Argyll Robertson always spoke with great affection and regard, that he returned to his native city and made up his mind to devote himself to the practice of ophthalmology. As was to be expected, work in his own specialty came very slowly, but he was by no means idle. He acted for some time as assistant to Hughes Bennett, and in that capacity he conducted the first class of practical physiology ever held in the University of Edinburgh. He was interested and well informed in all departments of medical study and always took the broadest possible view of questions and of cases that came before him, and it was characteristic of him that he chose for the subject of his Presidential Address to the Ophthalmological Society in 1893, "The Therapeutic Contributions of Ophthalmology to General Medicine."

As time went on he built up a rapidly increasing practice, and his contributions to medical knowledge were making his name familiar to the profession throughout the world. In 1863 he published in this *Journal* "Observations on the Calabar Bean," proving it to contain a principle directly antagonistic to atropin in its action upon the eye. For the suggestion which led him to experiment with this drug he was indebted to Dr., now Sir Thomas R. Fraser. The addition of so powerful a weapon, and one that had been long desired and sought, to the armamentarium of the ophthalmologist attracted universal attention to its discoverer. In the year 1869-70 he published, also in this *Journal*, the records of cases which showed that disease of the spinal cord is sometimes associated with loss of the light reflex of the pupil but retention of its movement on accommodation. This condition was by common accord christened the "Argyll Robertson" pupil, and through it, had he done nothing else, his name would be handed down to future generations. Meantime his eminence had been recognised at home by his appointment, first as Assistant Ophthalmic Surgeon to the Infirmary under the late Dr. William Walker (1867), and later as his colleague (1870). He continued to act as Ophthalmic Surgeon to the Infirmary till 1897, an exceptionally long period of office, which testifies to the esteem in which he was held by the Managers.

For many years he lectured during the Summer Session on ophthalmology, and although the subject was not in his time a compulsory one, his admirably clear and authoritative teaching attracted a large number of students.

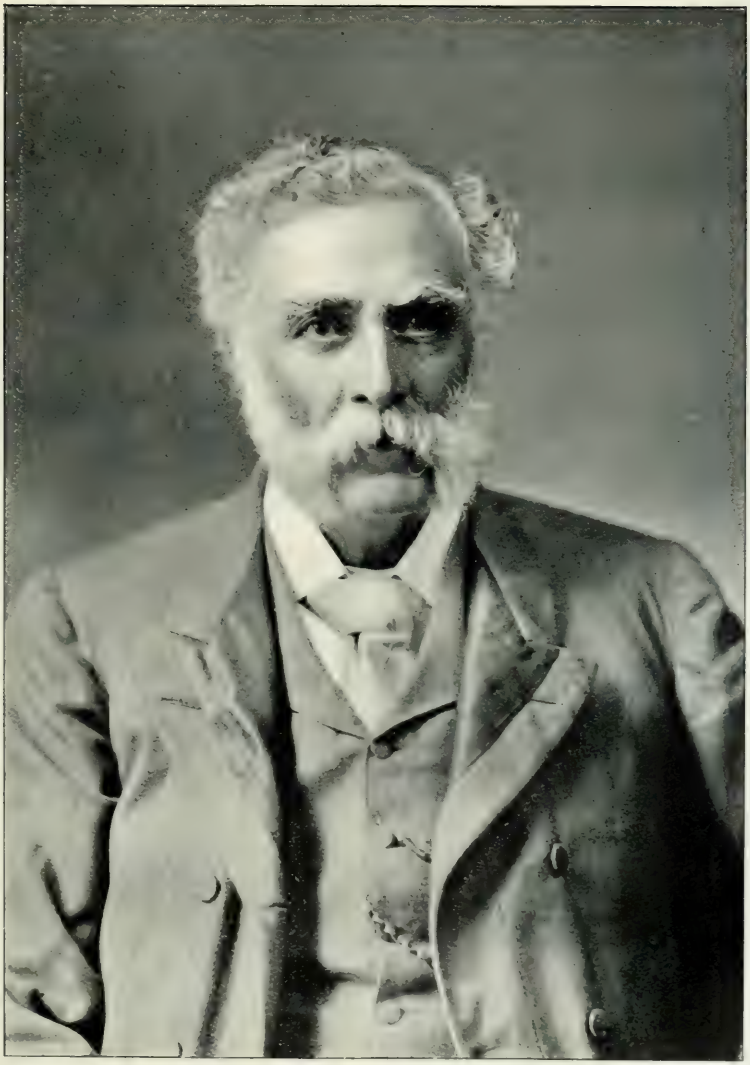


Photo by Moffat.]

DOUGLAS ARGYLL ROBERTSON.

In the affairs of the College of Surgeons, of which he became a Fellow in 1862, he took an active part, and he devoted much thought and time to its interests. He was President of the College in 1886-8, and filled this office with great distinction.

Honours flowed in upon him from all sides. He was Surgeon-Oculist in Scotland both to Queen Victoria and King Edward. He was the first surgeon outside London to be chosen President of the Ophthalmological Society of the United Kingdom. He presided over the International Ophthalmological Congress in Edinburgh in 1894; he was President of the Edinburgh Medico-Chirurgical Society, 1896; President of the Edinburgh Branch of the British Medical Association, and three times of the Ophthalmological Section at the annual meetings of the British Medical Association. The University of Edinburgh conferred upon him the degree of LL.D. in 1896, and many foreign societies elected him to their membership.

He went round the world by way of India and Japan in 1892; and his friendship with the Thakar of Gondal led to a second visit to India in 1900. These tours were rendered additionally interesting by the cordial reception accorded to him by many of his old students. During his later years, although there was no indication of loss of vigour, he found the keenness of the climate in Edinburgh very trying, and five years ago when he decided to retire from practice he settled in Jersey, where he had a charming house with a delightful garden, within easy reach of a golf links. At the commencement of the present winter he and his wife re-visited India and he was well and hearty until within ten days of his death.

Though he took an active interest in all kinds of manly exercise, golf is the one which is especially associated with the name of Argyll Robertson. In the late sixties and early seventies he was in the very first rank, as his winning of the Scratch Medals of the Royal and Ancient and the Honourable Company attests, but he was a good golfer to the end, and his swing was as free at St. Andrews as ever only a few months ago. He was the first Captain of the Royal Colleges Golf Club, and presented a handsome Scratch Medal, which is known by his name and is awarded annually for the best scratch score. It is only seven years since he won it himself for the second time in a field not destitute of capable exponents of the game. He did not often miss the meetings of the club at Gullane, and even after his retirement to Jersey he sometimes managed to make his visit to Edinburgh correspond with its annual competition.

Argyll Robertson was a singularly gifted and attractive man, one who would have come to the front in any walk of life. His tall, lithe, handsome figure and clear-cut features could not fail to attract attention in any company: his air of distinction, his dignified and kindly bearing, his courteous manner, gave him a rare power of winning the

confidence of those privileged to enjoy his friendship; his sincerity, kindness of heart and geniality called forth an admiration which is given but to few. As an operator he was neat, rapid and resourceful; he introduced several new procedures, particularly those of trephining the sclerotic for glaucoma, and suturing an everted lid in position over a splint. It was in the Infirmary that his teaching was most appreciated. His clinics were always enlivened by the play of humour; his students will not easily forget the earnestness with which, his eye twinkling the while, he exhorted the mother to put the bread-poultices in the child's stomach, never on an eye again unless specially ordered by a doctor; or advised the excessive smoker to throw away his pipe and give his tobacco to his bitterest enemy. Though he published numerous papers and addresses, he left much unrecorded that would have been of value. He preferred the tongue to the pen as a medium of instruction.

Upright and honourable in all the relations of life, he was specially concerned for the honour of his own profession. He always did what he could to "save the face" of anyone who had unwittingly made a mistake in diagnosis or treatment, but anything that was mean or underhand or that violated his own high standard of professional conduct he regarded with stern disapproval. His sane and cool judgment and wide knowledge of affairs made his friends rely upon his opinion, and he was much consulted by those in doubt or difficulty. He shunned controversy, but, if he felt it his duty to enter upon it, he was a resolute and skilful, though always a courteous and kindly antagonist.

Many throughout the world will feel the poorer to-day because "Argyll" has gone from us, but the memory of his chivalrous honour, his faithful discharge of duty, and his brilliant achievements will be cherished by those who knew him, and will help and stimulate those who follow. R. A. L.

GEORGE DICKSON, M.D., F.R.C.S.Ed.

Dr. George Dickson, who died on 18th January 1909 after a very short illness, may be said to have died in harness. He worked steadily among patients, possibly not very numerous of late, but thoroughly docile and devoted. He rarely used a cab or carriage. His tall, spare figure was a welcome sight to those who knew him. He walked well, often reading a book which did not seem to interfere with his movements. He was a man of many interests, an enthusiastic mason—he seems to have held every honour the craft could give him. He had some remarkable theories on the manufacture and specially on the varnishing of violins. He was fond of all kinds of experiments beyond the range of somatic problems, and seemed to be "far ben" in mental thera-

peutics. With certain patients he used no medicines, but simply told them that they would have an evacuation at a certain hour, and it came off, however inconvenient it might be. (He told the writer of one lady fond of her bed and who generally retired early. He ordered her at 10 o'clock. Unluckily she forgot and went to the play.) He was a loyal friend, a delightful companion. He had disappointments which did not sour him. No man looked forward to the future with less apprehension. At one time he was a splendid anæsthetist. J. B.

HERBERT J. B. LORRAINE, L.R.C.P.&S.(Edin.).

After a serious illness of three months' duration, this well-known Border physician died at his residence in Hawick on Tuesday, 12th January. A native of Dumfriesshire, Dr. Lorraine was born in the manse of Caerlaverock about fifty-six years ago. After qualifying in Edinburgh, he acted for some time as house physician to the late Dr. Geo. Balfour in the old Infirmary. After this he accepted an appointment as private physician to the owner of a ranch in Colorado, and his experience of Western America, in somewhat lawless times, was wide and varied. Eventually he took up practice in the north of England, and about twenty years ago he came to Hawick as successor to Dr. Penman, who is now in Fleetwood. With the public life of the Border town Dr. Lorraine closely identified himself. In politics he was a strong Conservative and an ardent Protectionist, and his fine presence, and clear and telling speech, made him a conspicuous personality on many public occasions. For some years he was a member of the School Board, and at the time of his death he was President of the Hawick Conservative Association. By his patients he was much beloved, and in many homes he will be long remembered for services rendered with genial kindness and unselfish devotion.

Dr. Lorraine held the appointments of Civil Surgeon at Stobs Camp, of Medical Officer to the Post Office Staff, and to the Merchants' Friendly Society. He is survived by a widow and two sons and three daughters, and his elder son, who is a graduate of Edinburgh University, succeeds him in his practice.

The large and representative company who followed the remains to Wilton Cemetery, on the Friday succeeding his death, was a testimony to the place Dr. Lorraine held in the community, and the widespread regret which his death has caused. J. R. H.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

THE fourth meeting of the session was held on 19th January, Dr. James Ritchie, President, in the chair.

Dr. George Gibson showed a boy, aged 5, suffering from cerebral diplegia, whose gait exhibited in a remarkable degree the characteristic crossing of the limbs due to contractures of the adductors. Dr. Gibson also showed a case of acromegaly, with early bitemporal hemianopsia.

Dr. Norman Walker showed a case which he believed to be unique. This was a young woman who had scattered patches of dark points, somewhat resembling comedones, arranged in linear fashion over the anterior chest wall and down the left arm. There was no blocking of sebaceous glands, and the actual nature of the condition was under investigation. Dr. Walker also showed a boy, aged 11, who had three inflammatory patches on the chin, probably primary syphilitic lesions, and a case in which the diagnosis lay between varicella gangrenosa and tertiary syphilis.

Dr. Gulland read a paper on "Stone-Masons' Phthisis," which will appear in the *Journal*.

Dr. Wm. Russell said the paper was of special value as containing the first published statistics with regard to the incidence of the tubercle bacillus in stone-masons' phthisis.

Dr. A. Walker referred to phthisis among the granite workers at Aberdeen. There was a greater incidence of phthisis among the hewers than among the workers at other trades, a greater incidence of hæmorrhage than in ordinary phthisis, and a later age incidence than in ordinary phthisis.

Dr. Edwin Matthew read a paper on the "Action and Uses of Vaso-Dilators in High Blood-Pressure."

Dr. Gibson said that in cases of very high pressure there was great arterio-sclerosis, and in such cases vaso-dilators might fail to cause a fall of pressure beyond 10 mm. of mercury. He referred to the vaso-dilator effects which could be obtained indirectly by the action of mercury and the iodides. Dr. Russell said he never gave a larger initial dose of erythrol tetranitrate than $\frac{1}{4}$ gr., and the personal factor had always to be carefully considered in the administration of the more potent vaso-dilators.

Dr. Dawson Turner gave an interesting lantern demonstration of results of electrolytic treatment and Röntgen ray diagnosis.

Edinburgh Obstetrical Society.

THE third meeting of the session was held on Wednesday, 9th January, Professor Stephenson, President, in the chair.

Dr. Brewis showed (*a*) fibroid complicated by pregnancy; (*b*) fibroid complicated by extra-uterine gestation. Supra-vaginal hysterectomy was performed in each case. Dr. Wm. Fordyce showed (*a*) fibro-cystic tumour of ovary, with twisted pedicle, removed from a woman aged 60. The tumour was densely adherent to all the surrounding parts. (*b*) A subperitoneal fibroid with twisted pedicle, growing from fundus uteri, removed by supra-vaginal hysterectomy from a nulliparous patient aged 32. The tumour was remarkable for the association with it of an enormous amount of free fluid in the peritoneal cavity; over 300 ozs. being drawn off at time of operation. This appeared to accumulate very rapidly, increase being noted even in the few days in hospital before operation. There were no appearances pointing to tubercular or malignant ascites. To the feel the tumour was unusually soft and velvety, and microscopically, so far as at present examined, it presented the appearance of being simply a very vascular fibroid. The patient had made an excellent recovery, and as yet no re-accumulation of fluid had occurred.

Dr. Wm. Fordyce then read a paper entitled "Clinical Notes on Seven Recent Cases of Extra-Uterine Gestation, with Remarks." Two of the cases occurred in nulliparæ, the others in parous women. In three the lesion was left-sided, in four right-sided. In one a small ovum was found loose in the left flank; in two no ovum was found, but traces of placental tissue and chorionic villi were found in the removed tube; in the others the gestation sac and ovum were removed in the affected tube. The menstrual symptoms showed great diversity, and in only one case was a membrane passed. Rupture had occurred both extra- and intra-peritoneally in three cases; in four it was intra-peritoneal only. In two cases it was noticed that the uterus was not appreciably enlarged. One case had been curetted, under the belief that the condition was that of retroflexed gravid uterus with dead ovum.

In his remarks Dr. Fordyce commented on the irregular symptoms and the varying character of the physical signs. He remarked how closely simulated the condition often is by an ordinary abortion, especially in cases when a membrane is passed. Another condition closely simulating ectopic gestation was that of impacted retroflexed gravid uterus. Cases of so-called sacculated uterus were probably in most instances really cases of extra-uterine gestation. The value of chloroform examination to clear up doubtful cases was referred to. In the condition of pain and collapse, while there was usually little difficulty in diagnosis, Dr. Fordyce had been impressed with the fact that

even in cases with very extensive hæmorrhage no dulness could be made out on percussion, and no bulging felt in the fornices.

As regards the question of operation, Dr. Fordyce thought it best to operate as soon as possible, and in all cases by the abdominal route, except in cases of actual suppuration. The technique followed was to swab out as much fluid blood as possible, determine by palpation the tube affected, and clamp it at once at both ends, before proceeding to separate blood-clots, which should always be done with great caution in case of starting fresh hæmorrhage. After securing and removing the affected tube the peritoneal cavity was washed out with saline fluid, a considerable quantity of which was left in in most cases, to aid absorption of the blood not removed. He did not favour the vaginal drain and never used it in any of his cases, but in several he inserted a large glass drainage tube, carrying a gauze drain, into the lower end of the wound. This was removed on the following day, and in all cases provided sufficient drainage. Direct intra-venous transfusion was done into the median basilic vein for collapse in several cases before and after operation. All the cases made good ultimate recoveries.

Dr. Brewis remarked that in Dr. Fordyce's series of cases there was only one of tubal abortion, the others being tubal rupture. He advocated delay in operation if possible until after acute symptoms had settled and adhesions formed. Dr. Haultain referred to the diversity of symptoms and the difficulty of diagnosis, and instanced three cases of suspected ectopic gestation in which all the physical signs disappeared on complete evacuation of the bowels. Dr. Berry Hart said that most cases diagnosed as impacted fixed gravid uterus were in reality cases of extra-uterine gestation. Dr. Barbour also emphasised the difficulty of differentiating ectopic gestation from retroverted gravid uterus. Dr. Haig Ferguson was interested to hear that several of Dr. Fordyce's cases showed no enlargement of the uterus. In his own experience he had found the same thing, and the normal size of the uterus had been verified in several of his cases by the use of the sound. He referred also to the diversity of the menstrual symptoms and to the resemblance of cases with febrile symptoms to cases of pyosalpinx. Whilst usually following the abdominal route, he considered the vaginal operation to be more suitable for some cases. Dr. B. P. Watson remarked that most hæmorrhage occurred in cases rupturing early, and attributed the lessened hæmorrhage in advanced cases to the changes of reaction in the tube leading to a thickening of its walls, &c., and to the probability of a ferment produced by the chorionic villi, which helps to keep the blood fluid during pregnancy.

Mr. E. Scott Carmichael read a paper on the "Physiological Conditions Relative to the Conservative Surgery of the Uterus, Tubes and Ovaries," which will appear in the *Journal*.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. SOUTTAR M'KENDRICK, M.D., F.F.P.S.G., F.R.S.E.,
Dispensary Physician, Glasgow Western Infirmary.

Some Recent Work on the Digestive Tract.

During the last few years a steady advance has been made in our knowledge of the normal and abnormal movements of the stomach and intestines. This has come largely from the work of the Röntgenographer, who has been able to observe the shadows thrown on the fluorescent screen, after the introduction into the alimentary tract of a bismuth meal.

Valuable information has been obtained likewise by other means, but I shall limit myself to only a few of these, viz., permeation, abdominal auscultation and gastroscopy.

I. Bismuth Meals and Röntgenography.—Before 1896 our knowledge of the movements of the stomach depended almost exclusively on the experiments of William Beaumont on Alexis St. Martin, followed more recently by the work of Pawlow [1] and his school. In 1896, however, Cannon [2] of America observed for the first time the actual peristaltic movements of the stomach in cats, by giving them meals mixed with bismuth subnitrate, and viewing the shadows cast by the X-rays on the fluorescent screen.

Shortly afterwards Rieder [3] in Munich and Holzknecht [4] in Vienna observed similar shadows for the first time in the human individual.

It is from the results of these observers that our knowledge of this subject has mainly sprung, modified in part and more fully worked out by Hertz,[5] Jolasse,[6] Groedel [7] and others.

How Bismuth is Taken.—Various methods have been used in taking bismuth.

Cannon mixed up 40 grms. of bismuth in 400 grms. of gruel and made this the test meal for cats.

Rieder employed the following method:—He mixed up 40 grms. of bismuth subnitrate with water or milk, and added boiled rice or potato purée little by little to the bismuth suspension, disguising the taste if necessary, the whole having the consistency of porridge. By this method the stomach is made out easily by the screen or photographic plate.

Groedel advised, as a preliminary, simply the swallowing of 10 grms. of bismuth in water.

Pirie,[8] in his case of œsophageal stricture, gave 2 drachms of bismuth carbonate mixed up in half a cupful of biscuit and milk, the whole to form a semi-fluid mass. Each mouthful is seen by the screen to descend when the patient is in the *oblique* position, reaching the diaphragm in about 3 seconds, and disappearing wholly out of the normal stomach in 6 seconds or so.

Hertz used bismuth carbonate in 1 to 2 oz. doses, with no ill effects, and without producing, which one might expect, constipation.

Levy-Dour was the first to introduce bismuth capsules and to observe their passage down the gullet.

Becker was the first to use a bismuth suspension in water introduced by the stomach-tube. Bismuth cakes and bismuth water biscuits have been used also for the same purpose.

Cases are on record of poisoning by large doses of bismuth subnitrate. It is believed that a nitrite gets formed by intestinal fermentation. Quite recently a case of poisoning by bismuth subnitrate was reported by Don[9] (see p. 134) of Dundee. The case was one of synovitis and cellulitis of the knee, the result of an accident. Fairly large quantities of a 33 per cent. solution of bismuth subnitrate in vaseline were injected into the abscess cavities. The author describes undoubted symptoms of poisoning, and cautions the use of the substance when given in large quantities and for simply diagnostic purposes. Hertz believes that the oxychloride and carbonate of bismuth are quite harmless, even in large doses—a view which is generally held by other workers.

Instantaneous Röntgenography. — Although ordinary tubes have usually been used with ordinary exposures for photographic records of the gastro-intestinal movements, Leonard[10] has recently written a paper strongly advocating instantaneous Röntgenography, as he believes this is the only method of eliminating motion in the small intestine and of observing the exact positions and movements of organs at stated times. He employs a current capable of supplying 40 to 60 milliamperes to the tube, with an exposure of only half a second. He concludes his paper by saying, "Instantaneous radiography has opened up a new and interesting field in physiology, a study which will no doubt yield material of great value both to the clinician and to the therapeutist."

Orthodiagraph.—For exact drawings of the appearance of the shadows at stated times, an apparatus called the orthodiagraph has been widely used. The orthodiagraph was invented by Professor Moritz[11] of Giessen, but for abdominal work a modified form has been made by Groedel of Bad Nauheim.

Physiological Movements of the Alimentary Tract.—Hertz[12] has done much to elucidate by the bismuth method the peristaltic movements of the alimentary tract, and quite recently in a paper which he read before the Royal Society of Medicine has shown that chronic consti-

pation may be treated more promptly when one knows the exact seat of the obstruction, or of any diminished peristalsis in the bowel.

He describes details of 8 cases, where he was able to show that there was delay in the sigmoid flexure and rectum, or in the small bowel, or in the transverse colon, &c.

Deglutition.—Hertz examined the process of deglutition in 14 normal young men. He used as a fluid 2 ozs. of bismuth to the pint of milk. He found that the average time between the commencement of deglutition and the disappearance of the last trace of fluid from the œsophagus was $5\frac{2}{5}$ seconds. Half of this time was occupied in passing down the gullet, the other half in passing through the cardia. For solids he used bread, the flour of which, before baking, had been mixed with bismuth carbonate. If the solids were properly chewed before swallowing, the time occupied in its transit into the stomach was the same as for fluids, but if not, the bolus passed slowly down the œsophagus, taking sometimes 15 minutes.

Hertz noted that there were two distinct sounds heard in swallowing, the first, sharp and short, heard best under the chin, and due, he thinks, to the impact of fluid against the posterior wall of the pharynx; the second, of a trickling or squirting nature, heard best in the epigastrium, lasting 2 to 3 seconds, and commencing about 4 to 10 seconds after the first sound. This sound is heard best when the stomach contains about 10 ounces of fluid. This sound is of a trickling character when the patient is in the vertical position or lying on the left side, while it is of a squirting nature when the patient is in the supine position, or on the right side. The squirts are usually 2 to 5 in number, and each one lasts about one second. Hertz noted, therefore, that the second sound was in the form of a trickle or a squirt, according to the position of the patient, and he believed that it was difficult to explain the nature of this sound, but it probably was due to "a fall in pressure in the bottom part of the œsophagus, and the rise in pressure in the stomach, when the fluid passes through the cardia. These may force gas from the stomach into the œsophagus, and so produce the sound."

Movements, Shape, Size and Position of Stomach, &c.—The stomach has been studied by the X-rays. A better and fuller light is now thrown on its physiological movements, its shape and size, its motor and secretory activity. The old view that the stomach was merely a receptacle for churning up food, so that it might become intimately mixed with gastric juice, has been abandoned. It is found to consist of two distinct physiological parts:—(1) the fundus; (2) the pyloric part. At their point of juncture there is a strong muscular band of circular fibres called the sphincter antri-pylorici. Food simply collects in the fundus, and when it becomes overfilled a tonic contraction takes place, and part of its contents are squeezed into the pyloric part.

There strong rhythmical contractions take place every 10 to 20 seconds ; the waves are both peristaltic and antiperistaltic, so that the food is thoroughly acted upon before it is passed through the pylorus into the duodenum. It is prepared for intestinal digestion, and the pyloric sphincter remains closed as long as the duodenum is loaded with food, and as long as its contents are acid and contain unsaponified fat. Reflexes from the duodenum regulate the passage of food stuffs through the pylorus.

From this one can argue that spasmodic contraction of the pylorus will take place if irritating solids be in the stomach, or if the contents be hyperacid. If the acidity be ·7 per cent. to ·8 per cent., there results prolonged pyloric spasm. It is highly probable then that many cases of dilation of stomach depend on hyperacidity and spasm, and not on pyloric stenosis. If an opening be made in the stomach and a sound passed through into the pyloric canal, the instrument will be firmly gripped from muscular spasm. One has again to be careful not to diagnose this condition as pyloric stenosis.

In normal persons the *motor activity of the stomach* should be such that after a bismuth meal the whole of the contents should have left the stomach in from 3 to 4 hours. If the food remains much longer than this, there is motor insufficiency or pyloric stenosis.

Hertz has discussed the subject fully, and likewise Craven Moore,[13] in a recent critical review of recent work on the stomach.

By the X-rays the *secretory activity of the stomach* can be also studied.

Jolasse, in his paper, tells us that Schwartz found that gold-beaters' skin was soluble in hydrochloric acid, and if bismuth were placed in small bags of this material, he observed that in presence of acid a diffuse irregular shadow was seen, whereas, in its absence, a small, clear circular shadow was apparent for a longer time. He noticed that in hyperacidity the small bag was dissolved in $1\frac{1}{2}$ hours; in normal acidity, in $2\frac{1}{2}$ hours; whereas in anacidity it took 5 hours or longer.

The shape and size of the stomach has been worked up especially by Groedel,[14] with the aid of his orthodiagraph. By means of his apparatus the passage of the bolus down the œsophagus can be seen, the patient standing obliquely, so that the shadow is seen between the spinal cord on the right, and the heart on the left. He finds that on looking dorso-vertically lower down, the exact position of the stomach can be made out. The stomach does not assume the position that most diagrams in text-books lead us to suppose. It passes vertically downwards and is "funnel-shaped." It reaches a point at about the level of the umbilicus, and then curves on itself, giving the appearance of a fish-hook, and consisting of a descending portion, a stomach sac, and an ascending portion. The upper pole is called the cephalic pole, and the lower the caudal pole. This type of stomach, when the patient assumes the vertical position, is present in 99 per cent. of the

cases examined. Groedel finds that the descending portion is to the left of the middle line; the sac is $\frac{2}{3}$ to the left and $\frac{1}{3}$ to the right, and the ascending portion is somewhat to the right of the middle line, terminating at the pylorus, which occupies a pretty central position.

He finds also that the female stomach lies more vertically than the male; the ascending portion is shorter; the stomach sac is broader; and the distance from the caudal pole to the symphysis pubis is less than in the male. He finds also that the shape of the stomach alters with respiration and with posture. When the patient lies on the back the stomach falls backwards, and the greater curvature is above the umbilicus; if the patient turns to the left side the stomach falls over to the left side likewise.

Holzknecht[15] holds that the normal appearance of the stomach with the patient in the erect position is "horn-shaped," the pylorus being the most dependent part of the stomach. Groedel observes this shape in only 1 per cent. of his cases, and he views this shape as an anomalous type.

Movements in the Small Intestine.—Cannon[16] described a type of movement in the small intestine that occurs also in the large intestine, which he calls "segmentation." The shadow showed the bowel divided into segments, and he believed that each portion of the bowel in turn assumed this peristaltic movement, in order that the food might be thoroughly mixed with the bile, pancreatic and intestinal juices. The shadows are not so well seen in the small intestine as they are in the stomach and large bowel, unless obstruction be present, when, above the seat of the obstruction, the bismuth becomes more thickly deposited, and a distinct shadow is seen. The faintness of the shadow in the small bowel, Hertz believes, is due to the rapidity in which the food stuffs pass along, and also to the large quantity of the digestive juices poured into the bowel at this part. Hertz also noted that the shadow in normal persons appeared in the cæcum in $3\frac{1}{2}$ to 5 hours after the last meal, and he calculated from this that the contents are propelled along the small bowel at about 5 feet to 7 feet in the hour, or 1 inch per minute.

Movements of the Colon.—Hertz noted that the contents appeared in the cæcum about $3\frac{1}{2}$ to 5 hours after a meal. They reached the hepatic flexure in from 5 to 8 hours, and the splenic flexure in from 7 to 10 hours. From then, onwards, the passage was slower, taking in all 28 to 48 hours before defæcation occurred. He observed, as did Jolasse, Groedel and others, that antiperistaltic waves are set up, beginning in the middle of the transverse colon and forcing the food from there backwards down the ascending colon, but not with sufficient force to affect the closed ileo-cæcal valve. He noticed that the contents of the small intestine entered the large bowel by spurts at regular intervals, the spurts being directed downwards towards the

external haustrum of the cæcum. The ileo-cæcal valve acts much in the same way as the pyloric does above, allowing small portions of food material to enter the large bowel at stated intervals, the whole being under the influence of reflexes, which control its movements.

The Process of Defæcation.—Hertz continued his observations in this direction also, and found that at first the diaphragm and the hepatic flexure were greatly depressed; the ascending colon then became flattened and broadened, and the transverse colon descended below the umbilicus, while the splenic flexure descended in a slighter degree. After defæcation the ascending and descending colon rapidly rose again, while the transverse colon remained down for over an hour. Hertz therefore believed that defæcation depended not only on increased peristaltic action of the descending colon and rectum, but as well on pressure exerted by the cæcum, ascending and transverse colon.

Pathological Lesions of the Digestive Canal.—Anything causing obstruction in the gullet can be easily made out. Pirie's case showed well how the gullet was compressed by an intra-thoracic growth. Simple spasm causing obstruction can be differentiated from organic stricture; for, if simple spasm, the bismuth shadow disappears, whereas, in organic stricture, the shadow is thinned down and is more gradual in its disappearance.

In the stomach one can sometimes locate ulcers, as the bismuth clings to the ulcerated part, and may remain there, giving rise to fine streaks of shadow for hours. Hemmeter[17] has diagnosed several cases of ulcer in this way, and he found that the bismuth spot in the ulcer remained for 24 to 36 hours, whereas it normally disappears in 4 hours or so. Hour-glass contraction can be made out, but must not be confused with the normal action of the sphincter antri-pylorici. Pyloric stenosis of organic origin can be diagnosed; for, if simple spasm, it is not likely that the food stuffs will remain in the stomach over 6 hours, and, as an aid here, the secretory activity of the stomach could be estimated. Tumours can often be made out by the irregularity of the shadow, and all forms of dilatation of the stomach and gastroptosis can be observed. In gastroptosis, Groedel noted that the pylorus was very freely movable, differing thereby from the normal pylorus. Davis, on the other hand, is very doubtful of this. He thinks that, "from the firmness and extent of the attachments of the duodenum, one would expect it to be held up, but recent skiagraphs have suggested that it too descends. We are in need of accurate post-mortem examinations to determine the position of the pylorus and duodenum in cases of marked ptosis."

A very exhaustive and interesting paper by Worden, Sailer, Pancoast and Davis[18] deals with the value of the bismuth skiagraph in determining the topography of the gastro-intestinal tract. They em-

phasise the importance of this method now, especially in stomach cases, for it gave them a knowledge of the true state of matters in many cases, where inspection, palpation, percussion, auscultation, inflation with CO_2 gas or air, illumination by the electro-diaphane all failed. Many beautiful skiagrams are shown and an analysis of 78 abnormal cases is given. The résumé of the cases is as follows :—

Gastroptosis, examined, 50 ; positive diagnosis, 49.

Gastroptosis and ptosis of colon, 6 ; positive diagnosis, 5.

Ptosis of colon, 8 ; positive diagnosis, 7.

Ptosis of sigmoid, 4 ; positive diagnosis, 2.

Carcinoma of stomach, 3 ; positive diagnosis, 1 ; unsatisfactory, 2.

Œsophageal stricture, 2 ; positive diagnosis, 1 ; negative, 1.

Intestinal obstruction, 4 ; positive diagnosis in all ; carcinoma of colon, 1 ; carcinoma of sigmoid, 2 ; obstruction by adhesions, 1.

Fæcal fistula, 3 ; satisfactory results in all.

Many other cases occur in recent literature of obscure diagnosis being cleared up by this method of examination. There should be little difficulty in making a diagnosis of "stricture, dilatation, prolapse, hour-glass stomach, and cancer of the stomach ; stricture, dilatation and tumour of the intestine ; prolapse of the colon and sigmoid" (Worden [19]).

II. Permeation in the Examination and Treatment of Stomach and Intestines.—In a recent paper by Scheltema [20] this novel procedure is described. By permeation he means the automatic sounding of the alimentary tract by a sound driven through the whole canal by the peristalsis of the gut itself. He introduces a thin flexible tube through the nose, catching the end of it in the mouth and then fixing a bulbous extremity—a pilot knob—to it. It is then guided into the pharynx, when it passes down into the œsophagus and gradually works its way itself into the stomach. At this stage the patient is given a large meal, and after some hours, by the X-rays, it will be seen to enter and pass through the pylorus, which in some cases may take many hours, and then to pass more quickly through the small and large intestines. The author claims for this method of treatment a reliable means of locally applying medicaments to the diseased portion of bowel and a method of syphoning off fluid contents from the small intestine for chemical analysis. By longer tubes he was able to treat the large bowel for parasites, &c. Permeation, he believes, will prove an additional help in the diagnosis and treatment of obscure intestinal diseases. All his observations have been made on children, and on no occasion was any difficulty experienced. The patients eat as usual during the operation and lie in bed.

III. Abdominal Auscultation as an Aid in Diagnosis.—Hertz [21] has recently shown that sounds may be heard by auscultation over the cæcum at definite intervals, and that these undergo changes through-

out the day. In the early morning before breakfast no sounds were heard, but from 3½ to 4½ hours after breakfast, a few sounds could be heard, which gradually increased in loudness up to the 6th and 7th hour. The sounds, he found, corresponded with the appearance of the shadow in the cæcum after bismuth had been taken with the breakfast. This is of importance, for it will allow many who have not access to the X-rays (and it may be said here that the X-ray apparatus required for gastro-intestinal diseases must be of the highest efficiency) to detect for themselves the time occupied by the transit of food from the mouth through the stomach and small intestine to the cæcum. The sounds are heard best when the patient is in the erect position, and depend probably on the iliac contents being ejected at regular intervals into the gas-containing cæcum.

Hertz showed also that if the peritoneum in the neighbourhood of the ileo-cæcal valve was affected, the valve remained permanently closed and the sounds were not heard. On the other hand, in 12 cases of appendicitis which he examined, he heard the cæcal sounds in all cases, showing that the peritoneum was not involved. This diagnostic sign, then, is of the greatest importance to the surgeon.

In typhoid fever gurgling is always heard in the cæcal region, but this is of itself not of great importance, as typhoid patients get small feeds frequently repeated and the cæcal sounds are constantly present. If on the other hand they cease in typhoid fever, Hertz says that it is almost certain that a perforation has occurred and general peritonitis has set in. He concludes by saying, "The presence of sounds in the abdomen in suspected cases of peritonitis is of greater importance than their absence, as, when the seat of origin of the sounds can be recognised, it may be assumed that the peritonitis has not spread to that locality, or inhibition of peristalsis would have occurred."

IV. The Direct Inspection of the Gastro-Mucous Membrane by the Gastroscope.—In a recent paper Souttar and Thompson[22] describe their new gastroscope, which is more easily manipulated and more delicate than those of Nitze and Leiter,[23] or Mikulicz and Leiter.[24] Their apparatus consists of a metal bougie encased in rubber, and composed of short segments of metal tube so connected that the whole forms a flexible rod, but can be straightened when desired. Mirrors are set at the angles of the tube so formed. In the nose-piece an incandescent lamp is fixed, and a window closed by one side of a reflecting prism. By means of a system of lenses the observer can see an area of about 6 inches in diameter. No anæsthetic is required in passing the instrument. It simply slips down the œsophagus like an ordinary stomach-tube. When once in the stomach, it is straightened and the stomach is blown up with air by a pump, forcing a column of air down a channel in the instrument. The light is switched on, and the stomach wall brought into focus by the eye-piece. The nose-piece can be made

to rotate by turning a wheel at the eye end, so that successive portions of the stomach wall can be examined.

They find that they can easily detect the branching vessels of the gastro-mucous membrane. In one case they observed extravasations of blood in the mucous membrane, while in another they detected a new growth at the pylorus.

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SURGERY.

By ALEXANDER MILES, F.R.C.S.,
Assistant-Surgeon, The Royal Infirmary, Edinburgh.

Postural Drainage in Diffuse Septic Peritonitis.

The marked improvement in the results following operation for diffuse septic peritonitis due to appendicitis, since the "elevated head and trunk posture," suggested by the late E. Ryerston Fowler in 1900, has been adopted, is illustrated in a paper by R. H. Fowler (*Ann. of Surgery*, December 1908). The writer has analysed the cases operated on in each year since 1898 in St. Luke's Hospital, New York City, and compares the results. Improvements in technique, in directions other than that of drainage, have been considered, and, from a statistical table appended, it appears, since postural drainage was adopted in this particular hospital, the mortality has fallen from 93·3 per cent. over all to 62·9 per cent. In those cases in which postural drainage was employed the mortality was 50 per cent., in those in which it was not employed 81·8 per cent. The author's figures favour the employment of irrigation of the abdomen in such cases, the mortality in cases irrigated being 66 per cent., as against 78·9 per cent. when there was no irrigation.

The author is of opinion that a further reduction of the mortality from generalised septic peritonitis is to be looked for from earlier operation rather than from any improvement in mechanical measures. The advantage of early institution of postural drainage is that it prevents the septic material reaching the diaphragmatic area of the peritoneum, rather than that it prevents further absorption after this area has become involved. Patients removed to hospital for operation should be transported in the sitting posture rather than lying flat, and during lavage of the peritoneal cavity the trunk should be raised. The particular manner of keeping the patient in the raised position must be varied to suit the requirements and comfort of different patients, and matters but little, so long as the pelvis is sufficiently low to allow of fluid gravitating there. Peritoneal lavage dilutes septic material, but plastic lymph not removed by irrigation or by simple lifting, should not be disturbed. Drainage is always indicated, and rectal infusion of saline fluid is of great value.

Madelung's Disease.

An interesting deformity in the neighbourhood of the wrist-joint is *radius curvus*, or Madelung's disease. A new case has recently been described by Marsau (*Arch. Gén. de Chir.*, 25th November 1908), who also gives a general review of the literature (*Gaz. de Hôpit.*, 5th December 1908). The affection was originally described by Madelung (*Arch. f.*

klin. Chir., Bd. xxxiii., 1878) as a spontaneous luxation of the wrist-joint, but subsequent investigations, and especially X-ray examinations, have proved that the essential anatomical feature is a bending forwards of the inferior epiphysis or lower end of the shaft of the radius, entailing no interference with the wrist-joint, but only a subluxation of the inferior radio-ulnar articulation. As a result of the deformity, the whole hand and the bones of the wrist are displaced forwards, and posteriorly the lower end of the ulna forms a marked projection from the sinking forwards of the carpus. The range of movement of the joints in the forearm and hand are not much interfered with, but there is a distinct impairment of muscular power. The X-ray examination may show changes in the epiphyseal cartilage which, instead of being transverse and of equal thickness throughout, may run obliquely and be altogether wanting towards the outer side.

Ninety cases of the affection have been recorded, but a great amount of uncertainty still exists regarding its etiology. Appearing between the ages of twelve and eighteen, and oftener in girls than in boys, it may be unilateral or bilateral. According to Estor (*Rév. de Chir.*, 1907), heredity is an important etiological factor. Many theories have been advanced regarding its pathogeny—relaxation of ligaments, reflex muscular contracture, trauma and rickets. Estor attributes the condition to a congenital laxity of the inferior radio-ulnar articulation which remains quiescent until injury or the strain of work increases the deformity. Poncet and Leriche (*Bull. de l'Acad. de Méd.*, 1907) believe in an inflammatory origin, and this is corroborated by Marsau's recent case where there was also tubercular disease of the ankle.

From the commencement of symptoms the affection reaches its full development in about two years, and during this period severe pain is frequently present. Then the pain disappears, and the permanent deformity alone remains.

The treatment generally recommended is rest during the painful stage; afterwards osteotomy of the ulna, and of the radius if necessary. The two bones should be attacked at a different level, to prevent their fixation to one another by callus.

The Treatment of Tetanus by Injections of Magnesium Sulphate.

The anæsthesia and muscular relaxation produced by subcutaneous or subarachnoid injections of magnesium sulphate have led to its use in tetanus. In all, fourteen cases have been recorded—eleven treated by subarachnoid injections, with five recoveries, and three successfully treated by subcutaneous infusions. In a case classed as "severe," reported by Miller (*Amer. Journ. of the Med. Sc.*, December 1908), eleven lumbar punctures were made within thirteen days, and about 2·5 c.c. of a 25 per cent. solution of magnesium sulphate were injected

on each occasion. As a result, "a patient in violent spasm and continuous opisthotonus was repeatedly reduced to complete and lasting relaxation in the course of a few minutes," and the enormous loss of energy in convulsions was prevented. The muscular paralysis involved usually all the muscles except those of the head and neck and the diaphragm, and lasted approximately eighteen to twenty-nine hours. The injections were followed sometimes by respiratory collapse lasting eleven to fourteen hours, and the pulse dropped, though not to a dangerous level. The case terminated successfully.

Excision of the Rectum for Cancer.

In this paper James P. Tuttle (*New York Medical Journal*, 5th September 1908), deals with those cases of cancer of the rectum operated on by him in the period extending from June 1892 to February 1908. Short reports of 100 cases are given, 22 of which could not be traced at the time of publication of the paper. The immediate deaths number 13, the recurrences 24, and there are 41 patients alive and free from disease at periods varying from one to seventeen years after the operation. In discussing the conditions influencing the results the author finds that, while the mortality in old people, *i.e.* over 60, is large owing to the time necessary for the operation, the hæmorrhage, and weak resistance to suppuration, recurrence is rarer than in the young. The fourth decade gives the worst ultimate result in his statistics. There is a gradual increase in mortality for every month's delay in diagnosis, except in very early cases of peculiar malignancy. Men preponderate, but the mortality amongst them is less than amongst women, except in the case of the combined operation, which seems to be better borne by women.

In 40 per cent. of his patients constipation had existed for a number of years before the cardinal symptoms of cancer set in, and he raises the question as to whether the irritation due to hard fæcal masses may not be a causative factor in its production. If so, this would seem to indicate a periodic examination of the rectum of those afflicted with constipation. So far as the influence of the nature of the tumour is concerned, the author finds that "the nearer the tumour approaches the epithelioma, in other words, the nearer it is to the margin of the arms, the more likely and sooner it is to recur after removal." The mortality seems little affected by the nature of the growth. As regards its situation, the percentage of deaths increases, and that of recurrences diminishes the higher the growth is situated in the bowel. Tuttle recommends an exploratory abdominal incision if there is any question of metastatic growths, before proceeding to extirpation. He only does a preliminary colostomy in cases in which the bowel above the growth cannot be cleansed otherwise,

and has found this to be the case in only three of his present series. He relies, for cleansing, on washing with solutions of hydrogen peroxide and internal administration of β-naphthol, taking a week in the process. In the performance of the operation he says "the trend of my practice has been toward less and less bone-cutting," and in accordance with this the majority of his patients have been operated on by the perineal route. In this operation the bowel has usually been brought down and stitched to the skin, and while the ultimate results as to continence are worse than in the bone-flap operation with end-to-end union, the deaths resulting from the operation are proportionately fewer and the healing more rapid. "In 24 cases in which resection and end-to-end suture was employed, there were only 4 instances in which there was not fæcal leakage into the wound, ulceration and obdurate fistula." The bone-flap, perineal and combined abdominal and perineal methods of operating are described. Analysis of the ultimate results shows that the chief cause of death is sepsis, that immediate relief of pain follows the operation, the wounds themselves causing only slight pain, that continence is perfect or good in two-thirds of the patients, and that seven-eighths of the survivors are in excellent or comfortable health. "Of the 100 cases, at least 50 patients have regained health and were perfectly well at the time of last observation."

He finds secondary operations in early recurrences of very little value, but good in late recurrences.

No arbitrary period of exemption can be set as proving a permanent cure, as there is no period at which cancer may not recur after operation; but assuming that the average patient with cancer of the rectum dies in about twelve months after its discovery unless operated on, Tuttle can point to an average gain of five years of life in 26 patients who survived the operation three years or more, as well as to 30 patients who lived, or are still living, from one to three years after the operation. He considers these results successful enough to encourage the pursuance and improvement of our present methods of dealing with the disease.

Pyogenic Affections of Joints.

The pathology of joint-disease has made great advances since the possibility of infection by the tubercle bacillus was established. From this starting-point many other varieties of infection have been discovered, and now it is difficult to name any common micro-organism which cannot attack the synovial membranes. Such discoveries have led to improvements in diagnosis and treatment, and a greater certainty in prognosis. But even to-day the tendency to mark all cases of "chronic inflammation of the knee" as tubercular or syphilitic, or to talk of "hip-joint disease" as synonymous with tuberculosis has not quite passed away. Marsh (*Birmingham Medical Review*,

November 1908) has recently emphasised the frequency of chronic inflammation of the knee from other causes. The gonococcus may cause it, not as better known in the first few weeks after the primary infection, but some months or even more than a year afterwards, when there may be no discharge of which the patient is conscious, and the diagnosis can be effected only by the demonstration of gonococci in urethral or vaginal washings. A streptococcal and more rarely a staphylococcal joint-infection may be subacute or chronic. In such cases a primary focus of infection can usually be made out, *e.g.* in the tonsil or pharynx, or in connection with the teeth. Such conditions are often wrongly diagnosed and treated unsuccessfully, as rheumatic, when the essential point in the treatment is the extraction of a carious tooth, the healing of a skin abrasion, or the curetting of a septic uterus after an abortion. Similar mild infections by the staphylococcus albus and micrococcus tetragonus are stated by Frœlich (*Révue d'Orthopédie*, January 1907) to be a very common cause of the pain in commencing flat-foot. Andrews and Hoke (*Charlotte Medical Journal*, November 1908) draw attention to the frequency of strain or chronic relaxation of the ligaments of the sacro-iliac synchondroses, and to the superposition of any toxic condition, *e.g.* in the bowels, leading to an infection of the joints. In this way are caused many cases of lumbago or sciatica from irritation of the nerves in front of the joints. For such, not only must the toxic condition be treated, but the relaxed ligaments must be suitably supported. In the region of the hip-joint also many cases of chronic inflammation are non-tuberculous. Legge and George (*Boston Med. and Surg. Journ.*, 17th September 1908) have demonstrated the value of X-rays in the early differentiation of such cases, the pyogenic infections starting in 75 per cent. of cases in the shaft, and the tuberculous nearly always in the epiphysis.

DISEASES OF CHILDREN.

By A. DINGWALL FORDYCE, M.D., F.R.C.P.,
Extra-Physician to the Royal Hospital for Sick Children.

The Trend of American Pediatrics in 1908.

In no domain of medicine has American energy, ability and progressiveness, coupled with American shrewdness and long-headedness, made within recent years a more prominent mark than in that of pediatrics—that branch of the science of medicine which is, in many respects and for many reasons, perhaps less surely founded on a scientific basis than any other, which is in this country counted unworthy of inclusion in the compulsory

curriculum of the student, which is consequently inefficiently studied and inefficiently taught, but which nevertheless largely controls the destiny of the future generation of the country. The subject is an important one; America interests herself in it deeply, and in some aspects of it has taught us valuable lessons, and a survey of recent American work is consequently bound to be instructive. At the very outset we are confronted with the limitations of scientific medicine, facing as we do the pseudo-science of percentage feeding.

Rotch and Holt, the pioneers in the intricate elaboration of this method of dieting, have earned the lasting gratitude of the profession for the broad lessons they have so ably and so widely taught; but the hypercritical study of minutiæ is apt to engender a lack of perspective; premises must be based on strict scientific truths to lead to satisfactory results, and the extent to which more particularly the former of these observers is elaborating the principle under consideration verges on the extremity of reason and brings more sharply into contrast much of the work and published opinions of the younger generation of observers in his own country.

Thus, in his address read before the Twentieth Annual Meeting of the American Pediatric Society, Delaware Water Gap, 25th May 1908, Rotch suggested a prescription card for laboratory use of the most complicated description, and in which the word "milk" did not even appear.

He also reiterated the necessity of accuracy in the composition of milk diluents, an important point emphasised likewise by Chapin.

Maynard Ladd, a disciple of and fellow-worker with Rotch, also lays stress on this latter point, and more particularly as regards the administration of starch.

He notes that "each writer on infant feeding gives his formula for making barley water and his experience in its use, but if one will analyse the mixtures recommended and then calculate the number of ounces of diluent which can possibly be used in different milks formulæ, one will discover the great variations in the percentages of starch that are given. It is my belief that this lack of uniformity of method in actual practice is partly responsible for the misunderstandings and difference of opinion as to an infant's ability to digest starch, and as to the advisability of giving it in the food in the early months of life."

But there is undoubtedly a growing opinion among the younger generation of American pediatrists, among both the better-class

clinicians and the abler scientific workers, that while the general principles of percentage feeding serve as an excellent basis for food prescription, yet that such prescription is *per se* non-scientific, and must be ruled and guided by higher biological tests.

Ladd controverts this view and states, "The calculations of calories and energy quotients in connection with percentage feeding can be easily made, but they add nothing in the way of information which cannot be obtained by careful observation of the gastric and intestinal functions and the weekly gain in the weight."

German views and German methods are, however, meeting with a large amount of sympathetic attention. Morse, a most able, careful practitioner of immense experience, regards them practically as of extreme importance; so do Freeman and La Fétra. Lamb considers "the most important thing in infant feeding is to know the exact amount of food the child receives in twenty-four hours. The only way to do this is to calculate energy quotients. The percentage method is uncertain, complicated and unscientific."

Howland, one of the ablest pediatrists in America, "thought that the capacity of children for fat could not be expressed in percentages," and quotes the work of Chigin, working in Pawlow's laboratory, Lintareu, and Keller and Steinitz in connection with the administration of a diet excessively rich in fat.

He alludes to the growing opinion in the country that whereas formerly the protein was considered the most frequent disturbing element in the infant's diet, yet now it is by many considered to be the fat. Numerous other authors allude to the danger of a diet excessively rich in fat—a danger much less striking in our own country, where the average fat percentage composition of the milk ordinarily supplied to infants is so much below that of milk for infants in America.

The milk supply is, as in previous years, the subject of very numerous publications.

Holt, Jacobi, Bryant, Prudden and Freeman report on the milk supply of New York city, and, *inter alia*, state: "The risk of transmitting tuberculosis through milk from cows to man is very slight unless the disease in the cow is in an advanced form or is present in the udder. Even this slight risk is considerably lessened when such milk is mixed, as it generally is, with that of healthy cows before it is sold. We believe that this danger has been greatly overestimated in the public mind, and that it can best be met by systematic inspection and condemnation of cows revealing tuber-

culosis on physical examination." This note of scepticism regarding bovine tuberculous infection through milk is noticeable throughout the country among the members of the medical profession, and is somewhat strangely in contrast with the scrupulous care taken for the provision of a pure milk supply for infants' use.

Bovine tuberculous infection is not seriously considered a grave danger in feeding with raw milk, but at the same time it has to be kept in mind that practically all herds from which the milk is used for infants consist of tuberculin-tested cows.

Comparisons may always be odious, they certainly are frequently extremely misleading: what holds true in America is not necessarily of equal weight in Scotland. The conditions of life and of the milk supply, the manifestations of disease and the very manner and means of diagnosing and the tests of disease are widely different in the two countries, and it cannot for a moment be gainsaid that nothing has so far emanated from America which should lead us in the slightest degree to minimise the danger to infants in this country of tuberculous infection through cows' milk.

The published observations of Holt and Northrup and of Bovaird on the frequency of primary intestinal tuberculosis in young children are well known. The former authors discovered its presence in 1·3 per cent. of cases and the latter in 1·6 per cent.—a very markedly different percentage from that noted by observers in this country. Further, M'Crae (Montreal) found that as a result of 747 autopsies undertaken on the bodies of foundlings reared on pasteurised milk, of whom 60 per cent. were three months of age or less, tuberculosis was found but five times (·66 per cent.), and he says: "Where, then, are our infections by milk? I do not know. I do know that these children are of low vitality; that pasteurised milk may well contain bacilli, attenuated but not dead; that the Province of Quebec has a fair amount of bovine tuberculosis, and that three months of life is sufficient time to allow an infection to take good hold. There must surely be less intestinal tuberculosis of infants than we have sometimes been urged to think." Not wholly convincing this to the unbiassed mind! What is the exact definition of that euphonious term pasteurisation here, and what the exact degree of "attenuation" to which these innocuous tubercle bacilli were reduced? The recently introduced tests of Calmette and Von Pirquet for tuberculous infection have been the subjects of numerous investigations, and considerable reliance is placed by the majority of writers on both of them.

In February a "Symposium on Rheumatism in Children" took place among the members of the Philadelphia Pediatric Society. At this meeting Longcope voiced practically the general feeling of disbelief existing among American pediatrists as to the specificity of Poynton and Payne's diplococcus, and Graham emphasised once again the very different picture rheumatism presents in America to that in this country.

Dunn stated, "For convenience, rheumatism in children might be divided into the following clinical types:—(1) The mild arthritic type; (2) the severe arthritic or adult type; (3) the latent type; (4) mild primary endocarditis; (5) severe primary endocarditis; (6) mild pericarditis; and (7) severe pericarditis."

Edsall "thought that, while it is all very well as a working basis to group these endocardial conditions of obscure causation and the joint conditions of obscure causation under the name of rheumatism, one ought to bear in mind constantly the fact that has been coming out more clearly in relation to joint conditions in adults, that some local cause for these conditions must be looked for constantly. As time goes on, although a large proportion of cases remain obscure and appear to constitute a distinct disease, a certain considerable number are falling into the class of those that are considered sepses, due to some focal source of infection in the throat, the gastro-intestinal tract, the genito-urinary tract and various other situations. If all obscure conditions are simply grouped as rheumatism, progress will be obstructed, unless it be realised that one must not stop with the provisional diagnosis of rheumatism, but must keep in mind that focal sources of infection must be sought for, and, if present, got rid of."

The October number of the *Archives of Pediatrics* is devoted to the subject of cerebro-spinal meningitis, and, of many interesting papers therein, perhaps the most interesting is that contributed by Flexner and Jobling. In it they give "An Analysis of 400 Cases of Epidemic Meningitis treated with the Antimeningitis Serum"—Flexner's serum.

These cases are from all parts of the world. The diagnosis was invariably established by bacteriological examinations, as well as by the usual clinical tests; in one way only was any selection of cases made, namely, that all cases which survived the first dose of serum less than twenty-four hours were excluded from the tables.

The death-rate of these cases was found to be 25 per cent., and varied markedly according to the period of the first injection of the serum. Thus, of those cases in which the first serum injection

was on the first to the third day of the illness, the mortality was 16·5 per cent.; in those in which it was on the fourth to the seventh day, 23·8 per cent.; and in those first injected later than the seventh day of illness, 35 per cent.

Flexner attributes the success attained by the serum to the fact that, by its injection into the spinal canal, "a bacteriolytic and somewhat antitoxic substance is brought in contact with the focus of the disease. I think this is the secret of the matter so far as efficiency goes. Given into the circulation, the secretion into the subdural space is slow and imperfect. The thing to be emphasised is that you require this fluid in a certain high state of concentration, and hence injections made directly into the spinal membranes is the obvious way of accomplishing this desideratum.

"There is a larger question involved in this study, which is, that it is an indication of the value of local application of antisera. The reason we have failed with sera in certain diseases is, perhaps, because we have tried to reach the local processes through the general circulation. Now, in meningitis, the general viscera show few evidences of injury at autopsy, thus supporting the notion that the systematic effects of the poison are inconspicuous."

The teaching of pediatrics has been brought, in many of the larger schools of Eastern America, to a pitch of great excellence. In Boston, under the surveillance of Dr. Rotch, and in New York, under Dr. Holt and others, the student is most thoroughly and methodically grounded in the subject, as is also the case at the Johns Hopkins Hospital in Baltimore, despite the want, so far, of a distinct hospital for children. Thoroughness, method and opportunities for practical work are marked characteristics of the system—a definite course mapped out with a view to the requirements of the average graduate, carefully arranged to fit in with the other requirements of his student life, and, above all, imperative access to cases.

Of the younger graduates—of the men who may be entitled the present generation of pediatric workers in the country—it may be said that the tendency is obvious to devote attention largely to the elucidation of scientific truths rather than, as in the past, mainly to the development of theories with a practical bearing.

The progressive development of medicine naturally necessitates that the methods employed by workers in one generation shall largely differ from those employed by the preceding generation. But the advances in bacteriology, in physiological chemistry, in

laboratory work and technique generally of the past twenty years, great though they be, are not such as entirely to account for the present condition of affairs.

Jacobi, Rotch, Holt and other pioneers of pediatric work in America have done such work in the past as to place America in the forefront of the nations as regards this branch of medicine. Her independent position has been most worthily gained, and the American School of Pediatrics is an established fact. And with the very development and attainment of this distinguished position has come more ready and broad-minded recognition of the value and of the necessity to herself of the teaching of other national schools. American pediatrists are looking to Great Britain, are looking to France, to Italy, to Austria and, above all, to Germany for ideas, for methods, for improvements which they may take to themselves, weld to their uses, alter for their own purposes, engraft on their own tree of knowledge and thereby not only enhance each man his own reputation, but modernise, enlarge and rejuvenate the national school.

PUBLIC HEALTH.

By WM. ROBERTSON, M.D., D.P.H., Medical Officer of Health, Leith.

It is not easy for a public health official to write a summary that will prove of general interest. Much of the official's work is of a routine character, the labours of his department being repeated with a sameness which threatens to spell monotony.

This threatened mental stagnation is varied by legal enactments which from time to time find a place in the Statute-Books of this country. It is well that new Acts should come to vary the tedium. Unfortunately, however, general enthusiasm does not always greet the new-born fledglings of parliamentary wisdom. This is not surprising. In theory the sections of the various Acts may be right, but when tried they are now and again found wanting. Take, for instance, the Notification of Births Act. Few local authorities have really grasped the importance of this measure. They have in not a few instances adopted the Act, but to what purpose? The staff provided to see to the proper administration of the measure is in most cases totally inadequate. Between Edinburgh and Leith there are two ladies whose duties consist, among others, in visiting such infants as require oversight. Practically-minded men will recognise that the work required by such an Act will call forth the energies of not one but several health visitors. In Scotland we are slow to move. On the other side of the Border they are far ahead of us in the employment of lady inspectors.

Municipal representatives are apt now and again to expect results in relation to the money spent. They look for such results from gas, water and electric light undertakings, and fail to weigh the different departments in the scales of reasonable judgment. More is the pity for the public weal.

Ridicule is often cast at the cult of the present-day Socialist. He may have his extreme ideas, but when one discusses sanitary problems with this extremist he is sound as far as the public health official is concerned. Those of us, therefore, who curl our upper lips at the bare mention of Socialism must remember that as a public health reformer that type of man who preaches confiscation is a strong Conservative in the domain of life preservation.

Only the fringe of the subject has been as yet touched in this country in the direction of safeguarding the interests of the young. More is being achieved with the scholar. He is being medically inspected, in some districts more thoroughly than in others.

Conferences, with much speaking on the part of theorists, have been held it is true, but the Education Departments have as yet failed to grasp the important need there is to teach the prospective mother the golden principles of infant-life protection. Typewriting and French, with mathematics, are deemed more important. If domestic economy were taught in a practical way the missionaries of public health would find their labours rendered much more easy. The lady inspector would teach principles and expect to implant them on partially tilled soil. The sands are being ploughed at present. On some ridges roots grow, but the roots require constant attention.

The spasmodic efforts being made to provide infants with a suitable dietary are to be commended; but we want a big organisation that will preserve a watchful care over every infant whose parents show that they are not capable of guiding their offspring along correct lines. The Continental system, which provides consultation places, must be adopted. That, again, means expense. What of that, if hundreds of lives are to be spared and the calling of the insurance agent rendered a poor one among certain sections of the community at least? There is much behind that. In a previous contribution it was pointed out that the non-extension of the Midwives Act to Scotland was regrettable. As time passes one sees no reason to alter that opinion. That Act logically dovetails with that for the Notification of Births. The conditions calling for the Midwives Act may have been worse in England than in Scotland, nevertheless in the course of investigations one realises that this Act would, if extended to Scotland, result in a good cleaning of the Augean stables. A skilled midwife who practises what she has been taught cannot be so readily objected to, but rule-of-thumb amateurs should be barred from pursuing a calling which is attended by so many risks to the mother and child. Behind them they not

infrequently leave a trail of puerperal infection. Their advice as to the feeding of infants is dangerous, and their sense of responsibility is conspicuous by over-confidence in their capabilities.

Within the next decade greater attention will be paid to the administrative control of pulmonary tuberculosis. Leaving aside, for the moment, the question of policy of notification, it will be generally conceded that control of this fell disease is necessary. It would be idle to attempt to belittle the objections to compulsory notification. Every man is entitled to have his own opinions, and he is most respected who backs his arguments with solid facts of reason. Prior to the amendment of the Public Health (Scotland) Act, 1897 (see previous issue), the objector to compulsory notification had a good case; now, however, the elasticity of interpretation rendered possible sweeps away many of the suggested attendant disabilities of notification. If the citation of such an insignificant spot as Leith be excused it can be said that most encouraging results have been secured by receiving really early cases of pulmonary tuberculosis for treatment. Either the citizens of Leith were very intelligent or they took a keen interest in the question. At any rate it remains to be said that parents voluntarily offered their sons and daughters for treatment. They even clamoured for it, and sought the influence of members of the Local Authority to secure early vacancies. The treated cases advertised the principle, and now, in Leith at any rate, the medical attendant does not approach the question with that dread which confronted him ten years ago when he found it necessary to break the news to the anxious parent. In process of time the question of notification will not be considered such a drastic procedure. The present-day citizen is keenly alive to the need for taking time by the forelock, especially when a member of his household develops an "ugly cough," or exhibits other manifestations of "decline." In fact, the day is fast approaching when the medical attendant will be heartily thanked for quickly recognising the presence of tuberculosis and so enabling the stricken one to receive the necessary treatment.

It is strange how the whirligig of time effects changes in fashion, thought and action. This applies to sanitation just as forcibly as it does to other spheres. Take pulmonary tuberculosis and scarlet fever as illustrations. With the adoption of compulsory notification of the commoner infections and their removal to hospital great things were expected. It was believed that scarlet fever would become a rare disease. The elaborate hospitals erected throughout the country were going to so separate the sick from the healthy that the spread of infection was to be stopped. That hope has not been fulfilled. With improved sanitation, regulation of overcrowding, and systematic inspection of slum areas such a disease as typhus has become uncommon. Improved water supplies have kept the spread of typhoid fever in abeyance. Vaccination and re-vaccination control small-pox, and so on.

When, however, one comes to the diseases commoner to scholars one realises that the spread of these maladies is not so easily kept in check. Diphtheria has apparently become more common, but methods of diagnosis are now fairly accurate, suspicious throats being at once eyed with misgiving. Formerly the medical attendant prescribed local applications, together with the homely steel drops and chlorate of potass, when he detected tiny exudates on the fauces of his patients. He never thought of diphtheria. With scarlet fever the question now is whether or not too much removal to hospital is practised. Dr Killick Millard some years ago made out a strong case in favour of the view that the isolation of scarlet fever had not met with the success expected. No one was able to completely refute his charts and figures, and so the question remained unsatisfactorily answered. Those who advocate the removal to hospital of all notified cases of scarlet fever may do so on principle. They cannot advance an unanswerable argument in favour of the procedure. The disease is not spread so readily as most people have been taught to believe. Nor can it be shown that cases of scarlet fever treated in houses *suited for home isolation* do any particular mischief. There is less risk of cross-infection when home treatment is practised, and when the arrangements for treating the patient are good the results are excellent. Many prefer to send their children to hospital to save trouble. Isolation hospitals were not erected to meet such contingencies. They were intended to isolate infected persons so that the spread of disease might be prevented. In many instances this spread can be avoided as well in a private house as in a hospital. During epidemic outbursts, when scarlet fever wards become crowded and no opportunity is afforded to rejuvenate the interiors, complications make their presence felt. This is the result of aerial sepsis and overcrowding. Ear, nose and skin discharges persist, throat conditions remain unsatisfactory, and residence in hospital is unduly protracted. All these facts do not assist the case in favour of wholesale removal to hospital. Much more could be done to winnow out cases so that a proportion might be nursed at home. There is *no law* which empowers a local authority, or its officials, to remove cases for isolation and treatment *when the house is suitable for dealing with the patients.* When cases of scarlet fever occur in houses crowded with susceptible subjects huddled together within narrow confines the matter is quite different. Isolation is in such instances imperative, not only for the sake of the badly-housed patient, but also for other inmates.

Few fever hospital authorities now adhere to his old-time teaching that each case of scarlet fever should be kept in hospital for six weeks. Some cases may demand longer isolation; many are now discharged at the end of five weeks, and return cases do not occur any more frequently than under the old system.

Much remains to be learned regarding scarlet fever, its origin and bacteriology.

DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P.,
Consulting Physician,

and

R. CRANSTON LOW, M.B., F.R.C.P.,
Assistant-Physician, for Diseases of the Skin, The Royal Infirmary.

Mobile Powders in Dermatological Practice.

The word powder in cutaneous therapeutics is usually applied to what is regarded as a harmless application; few consider that it is capable of influencing the existing diseased condition, that it can arrest advance, diminish oozing, or rapidly check a spreading erythema. Yet if such results really follow its employment, an assumed innocent procedure becomes a truly efficient one. These are, in brief, the opening sentences of a most interesting article by Pinkus and Unna (*Monats. f. Prakt. Dermat.*, 1st October 1908, Hamburg). Gründler, in 1888, carried out some experiments on the absorptive properties for water of various pulverulent substances, and recommended carbonate of magnesia and silica as possessing these in a high degree. Since then the theory of the use of powder has received no amplification, but the art of preparing them has advanced. In casting from moulds it was found difficult to impart to the surface of the wet sand all the traceries, but it was discovered that this defect was overcome by covering it with a thin layer of lycopodium, when all the fine details could be reproduced. The scarcity and consequent high price of lycopodium, however, necessitated a search after substitutes. In prosecuting this it was obligatory to bear in mind the peculiar excellences of lycopodium, which are—1. Its remaining dry in presence of water. 2. The elasticity of its individual particles. 3. Their uniform size. 4. The natural mobility of its ultimate elements. The incapability of being moistened is of great importance in making castings, since it prevents the adhesion of the wet sand. As corresponding to this, fat-containing powders are not unknown in dermatology and as cosmetics. When a powder is dusted on the skin it absorbs some of the cutaneous grease, and so becomes in a measure an unctuous powder. It thus favours normal transpiration, and exerts a cooling effect. The elasticity of the individual particles is peculiar to organised bodies, but is of less consequence in dermatology than in moulding. As regards the size of the particles, it is probable that the finer can insinuate themselves more deeply into the natural inequalities of the skin than the coarser. Finer powders thus permit the formation of a thicker layer, while the coarser are possibly better suited to lessen the friction of surfaces of the integument against each other. The fourth point, the small amount of inherent friction between separate

particles, manifested by lycopodium, has hitherto been scarcely considered from the pharmacological side, yet is of much theoretic and even of practical interest. Lycopodium, when poured out, is characterised by a mobility which approximates to that of fluids. The workman moulder expresses it thus: "Lycopodium runs like water." This peculiarity manifests itself also in its behaviour on the skin. If dusted over it, it coats the skin with a uniform, very thin, and—owing to its yellow colour—a very visible covering, any excess of which falls off on the slightest movement. It thus stands alone, and in marked contrast, to all other powders hitherto prepared, which, when applied in this way, cohere into larger or smaller collections, requiring to be subsequently smoothed down. Seen under the microscope the same features emerge. While the grains of lycopodium are regularly distributed, those of carbonate of magnesia or of potato starch lie here in opaque masses, there widely scattered. This proves that lycopodium is pre-eminently "slidable." Experiment has shown that to communicate to other powders a share of this property, it suffices to add to a large-grained powder a trifling proportion of a small-grained one. Thus a powder of eminent mobility can be compounded if, to the naturally non-mobile potato starch, 1 to 1½ per cent. of the equally non-mobile carbonate of magnesia be added. The reason is that the grains of lycopodium are studded with small but regular prominences, which prevent much surface adhesion. In the same way the tiny particles of magnesia attach themselves to the starch granules and isolate them. If potato starch is heated, and part of its watery constituent driven off so that its granules are reduced in size, there is a corresponding rise in mobility, but this is lost when the granules swell again by absorption of moisture from the air. Air indeed occupies the interspaces between the particles of a powder, and when it absorbs water this is in great measure taken up by these interspaces, so that water now replaces air. If we designate the amount of water which a dry powder can absorb into its interstices without visible increase in volume—its water capacity, we may speak also of the air capacity of a dry powder. By slowly pouring water into a funnel filled with powder till it begins to drain off, we can estimate its water capacity, and in like manner we can determine the mobility of a powder, which is due to its air capacity, by the height to which it can be heaped up over a given area. The higher the conical pile can be made, the less the mobility. The highest proportion of mobility which it is possible to impart to a composite powder is attained when each of the largest particles of the compound is just, and no more, coated with the smaller. Any excess of the smaller lessens its mobility, and thus each pulverulent substance has its own proper mobile proportion. Thus, taking potato starch and carbonate of magnesia, the highest mobility is acquired when each granule of the starch is just coated over with magnesia. The idea

occurred to the authors that there ought to be an analogy between a mobile powder and ball-bearings, which have been shown so wonderfully to lessen friction. But in ball-bearings the mass, the equality in size, and the smoothness of the metallic surface differ essentially from the qualities of the particles composing a mobile powder, which are light, minute and unequal in size, and not polished. Again, in ball-bearings, the balls revolve in a fixed and limited space, while a powder interposed between two cutaneous surfaces is unrestricted. Hence the essence of a mobile powder consists much more in its tendency to provide a uniform, single, but firmly adhering covering to the skin, in contrast to the lumpy aggregations of those hitherto in use. Powders are thus very naturally regarded as disfiguring when employed as cosmetics. Mobile powders, on the contrary, possess properties which fit them in a special manner for beautifying the skin and concealing defects. Unna's pulvis cuticolor, till now one of the best protective applications of this kind, has the following composition :— Boli rubra, 0·5 ; boli alba, 2·5 ; magnesiæ carb., 4·0 ; Zinci oxidi, 5·0 ; amyli oryzæ, 8·0. M. As mobile powders the following formulæ have proved most efficient :—Amyli solani, 89·0 ; Zinci oxidi, 10·0 ; ceræ carnaubæ, 1·0. M. ; adde solutionis ichthyoli, 1 per cent. ; solutionis eosini, 1 per cent. ; āā, 5·0. fiat pulvis fluens ; Zinci oxidi, 5·0 ; lycopodii ad, 100·0. M. ; adde sol. eosini, 1 per cent. ; 10·0. fiat pulvis fluens. Should we wish to combine sulphur with this for the treatment of such affections of the face as call for it, such as rosacea or acne, a formula such as this is suggested—Amyli solani, 89·0 ; Zinci oxidi, 5·0 ; sulphuris præcip., 5·0 ; ceræ carnaubæ, 1·0 ichthyoli ; eosini-quantum satis. fiat pulvis fluens cuticolor. It perhaps should be mentioned that cera carnauba is palm wax. It is possible to construct an excellent paste from a mobile powder useful for similar purposes as the last powder. Zinci oxidi, 10·0 ; sulphuris præcip., 5·0 ; lycopodii, 5·0 ; adipis lanæ, 7·5 ; olei amygdal, 7·5 ; aq. aurantii flor., 15·0. M. ; adde sol. ichthyoli et eosini quant. suff.

The Absorption of Water by the Skin.

The question of the absorptive power of the skin has long been a vexed one. Chirag and Lamarre (*Gaz. des Hôp.*, 30th June 1908) have recently made a series of experiments to try to decide the point. The individuals experimented on were immersed in baths for varying periods of time. The same conditions as to time of day, kind of water, &c., were regularly observed. The individuals were always experimented on in a fasting condition, and were weighed very exactly before and after the bath. The first series of experiments was undertaken with pure water, and the authors came to the conclusion that when a person is immersed in water, a certain interchange of fluids

takes place. This interchange consists in an absorption of water by the skin, below a temperature which is fixed for a given water and a given individual, and in an exhalation of water above this temperature. This temperature is called the isothermic point, and varies in different individuals, according to their inherent thermic sensibility. Those whose isothermic point is low cannot stand baths of a very high temperature, which again is easily borne by those whose isothermic point is high. The intensity of the changes are only partly proportionate to the duration of the bath. After one-half to one hour the intensity of action diminishes very rapidly. The extent of the changes is also subordinate to two factors, which the authors call the internal and the external osmotic potential. The external osmotic potential varies with the density and pressure of the water, and possibly also with other unknown elements. By varying, as desired, the different factors just mentioned, one can easily, according to the therapeutic indications, cause an absorption or an exhalation of water by the skin. To get absorption of water one must use water of a high density and of rather a low temperature, and increase the internal osmotic potential by dehydrating the individual as much as possible. If, on the other hand, one aims at causing an exhalation of water through the skin, one should employ prolonged baths of hot water at low density. Chirag and Lamarre think that these observations perhaps explain to some extent certain facts which have long been known, such as the value of cold baths in hyperpyrexia. They also hope that they may be the means of suggesting new and useful indications for the use of baths.

The second part of the paper deals with the absorption and excretion of chemical substances through the skin by means of baths. Persons were immersed in solutions of different salts for various periods of time. Although the authors were unable to demonstrate any absorption of these drugs through the skin, they are convinced that it should be possible to realise the cutaneous absorption of medicaments and substances in solution in baths and douches. On the other hand, they believe that they have proved that excretion of the natural salts of the body, and even of abnormal substances, *e.g.* iodine, can easily occur. To obtain these effects it is necessary to employ warm baths with water of low density, in order to facilitate an exosmosis and secretion from the skin. The importance of this fact from a therapeutic point of view is evident. In cases of uræmia remarkable results might be obtained by the use of hot baths of distilled water. Unfortunately it is difficult to obtain sufficient quantities of distilled water. For persons exposed during their work to chronic poisoning this method is also applicable. A daily warm bath, while not only serving to remove toxic substances which have accumulated on the skin during their work, would likewise rid the

body of a part of the poison already absorbed, and so relieve the kidneys of some of their task.

Hot Air in the Treatment of Skin Diseases.

Although the use of hot air as a local application in skin diseases is not new, several results of such treatment have recently been published. Durey (*Congrès de Physiotherapie*, Paris, 1908) employed this plan for varicose ulcers of the leg. During the treatment the patients continued their ordinary work. The proportion of failures was 1 in 5. Where a cure resulted the ulcer healed rapidly in from 12 to 15 days on the average, but recurrences are frequent, and the treatment seems to be less efficacious when employed then than on the first occasion. In all sluggish wounds the hot-air douche is a good mode of treatment, the process of repair is accelerated and good cicatrices formed. Dausset and Laquerrière (*Soc. de Therap.*, Paris, October 1908) have published three cases of suppurating wounds which rapidly healed up under the application of hot air. Wounds in diabetics seem to be specially beneficially influenced. Dausset (*Congrès de Physiotherapie*, Paris, 1908) has obtained in three weeks the healing of a perforating ulcer in a diabetic which had lasted for three years. Cases of diabetic gangrene have also been favourably influenced by baths of hot air. The chronic dermatitis due to X-rays has in like manner been benefited. Bayet has had good results in acute seborrhœic eczema, the crust formation and serous exudation rapidly ceasing. Hot air is also recommended for pruritus. Benefit and rapid cure has ensued in rebellious pruritus vulvæ, and it has proved advantageous in itching associated with lichen, eczema and urticaria. In such cases the hot-air bath is much preferable to the local hot-air douche.

The Cause of Dermatitis Herpetiformis.

With regard to the etiology of dermatitis herpetiformis and pemphigus we are yet in the dark. The majority of recent investigations tend to show that these diseases, which are in many ways closely allied, are not due to some nervous disturbance, as was formerly supposed, but to an auto-intoxication of some kind. In support of this view Bouveyron (*Lyon Med.*, 18th October 1908) has reported a case of dermatitis herpetiformis in a patient suffering from a well-marked cirrhosis of the liver, albuminuria and intermittent glycosuria. The patient had a typical eruption of dermatitis herpetiformis which came out in crops at intervals. Cirrhosis of the liver was indicated by enlargement of that organ, ascites, dilatation of the superficial abdominal veins, dilatation of the venous radicles of the face, &c. There was also evidence of chronic Bright's disease with albuminuria, diminution of urea secretion and arterio-sclerosis. On the assumption that the skin

eruption depended on a faulty functioning of the liver, he was given sulphate of soda in small doses. This produced a very remarkable improvement in his general condition, and a very great amelioration of the eruption, which had hitherto been very extensive and itchy. The eruption recurred when the drug was stopped, and again almost disappeared when its administration was resumed. The treatment caused a great improvement in the urea excretion and in the symptoms due to the cirrhosis. The liver diminished in size and the patient improved every way. In further support of the hepatic origin of dermatitis herpetiformis, the author also quotes a case of herpes gestationis, which occurred in an alcoholic woman with an enlarged liver. She had an eruption like dermatitis herpetiformis during each pregnancy. The eruption disappeared at the end of pregnancy and simultaneously the size of the liver diminished. In her case, too, there was diminution of the total urine and urea excretion, with occasional alimentary glycosuria. These all improved after the pregnancy came to an end. These cases certainly seem to favour the theory that bullous eruptions, such as dermatitis herpetiformis, are due to some hepatic disorder, but the author, while claiming that in his cases the eruption was probably dependent on the hepatic condition, admits that possibly all are not referable to this cause, but to some other fault in general metabolism.

MENTAL DISEASES.

By DOUGLAS M'RAE, M.D., F.R.C.P.,
Medical Superintendent, Ayr District Asylum.

Dementia Præcox.

This continues to be a fruitful source of discussion among alienists, and has certainly stirred up some of the older of them to defend themselves against the invasion into their realms of clinical security. "Confusional Insanity and Dementia Præcox" is the title of an interesting article by Dr. Knapp of Boston (*Jour. Nerv. and Ment. Dis.*), in which he repeats that among the characteristic symptoms in dementia præcox are negativism, verbigeration, mutism, stereotyped attitude and katatonic states. The patient is not influenced by emotions, the attention is defective, but perception and orientation are good. The onset is slow and recovery rare. In amentia (confusional insanity), consciousness and memory, on the other hand, are much impaired, perception and orientation are much affected, as also is the ability to recognise persons. Onset is sudden, often follows intoxication or exhaustion, and recovery is not uncommon. The distinction between the two conditions is at times very difficult, and, indeed, Bianchi considers that amentia, acute dementia, dementia præcox,

katatonia, stupor and mental confusion are merely syndromes in what he calls a "sensory phrenosis." There are no pathological findings to establish a distinction, and toxins are admitted to be an etiological factor in dementia præcox by schools which lean mostly to an hereditary origin.

Knapp says that complex psychical phenomena have all been insufficiently studied, even in varying physiological or normal subjects and in ordinary diseased conditions, to permit of any accuracy in deductions concerning alienated states. The symptoms and course of dementia præcox, as described by Kraepelin, may occur in amentia and *vice versâ*, and no hard-and-fast line can be drawn between the two diseases. Variation in symptoms is not so much a difference in the disease itself, but is according to the extent and severity of the attack, and differences in persons attacked. In explanation, reference is made to the well-known varying effects of alcohol on different subjects. Finding that the distinction between dementia præcox and amentia is so often incapable of demonstration, Knapp inclines to think with Bianchi that the two affections are identical.

That dementia præcox claims many cases that are neither demented nor even early in development of symptoms, and has such an extraordinary elasticity in its varieties of these, all of which occur in many other forms of insanity, are facts which certainly make it hard for some to acknowledge its title to be considered a separate entity. Under the term *adolescent insanity* a great deal has already been recorded, though perhaps in simpler language, but with just as vivid accuracy as under the more modern misnomer of *dementia præcox*. Knapp goes on to say that the dementing character of dementia præcox is not progressive as in paralytic or senile damages, and many asylum dements are found to be re-educable. It is merely a crippling after an acute psychosis, which depends for its degree upon the severity or duration of the attack and at what stage of intellectual development it occurred, resulting in the so-called "hebephrenic" and "paranoid" types. The name *dementia præcox* is not only etymologically incorrect, but it gives an unwarrantably hopeless outlook, only too likely to deter legitimate therapeutic endeavour.

Dr. Robert Jones[1] observes that in the earliest works of Clouston, Savage or Bevan Lewis no mention is made of such a variety, yet no one will deny that all the symptoms descriptive of this condition were fully realised, accepted and described. Kraepelin merely grouped these varieties of insanity previously known and described, and did not create a new entity. It must be admitted, however, that there are no hard-and-fast lines; the symptoms overlap—are interchangeable—and many are common to all three forms, and there the classification fails,

[1] Meeting of Medico-Psychological Association in London.

in that they are not mutually exclusive. He argues that the symptoms of any case of insanity depend in some degree upon the stage of development of the mind at the time the attack occurred, and, as in other diseases, the different systems are affected according to time of life. The different "stupors" give a hope of recovery, which no use of the word "dementia" possibly can.

Dr. Urquhart[1] also attacks "dementia præcox" from the point of view of nomenclature. Thirty per cent. of adolescent insanities recover in his experience. Præcox is faulty, because Kraepelin would include persons as old as 40 and even in one case 56 years of age; in which cases, he presumes, the process of evolution and development have not quite ceased. This can hardly be said to be in accordance with the accepted belief of physiologists that development is complete at 25. The diagnostic point that there is a "peculiar and fundamental want of any strong feeling of the impressions of life" can be seen in any asylum from which "dementia præcox" has been rigidly excluded. The misuse of words Dr. Urquhart deplores, and he would restrict "mutism" to a congenital defect, and continue to employ "taciturnity" for the silence resulting from delusion. "Negativism" conveys no meaning, whereas "resistiveness" does. He states that Bianchi definitely rejects the conception of dementia præcox as a clinical entity, because we get no clearer knowledge of the cases by so endeavouring to discriminate. We cannot decide how the disorder will end. Kraepelin leans to an auto-intoxication theory; but it has yet to be shown that this may differ from cases occurring in the maturity of life. To reject *adolescent insanity* and adopt *dementia præcox* would not strengthen us in diagnosis, in pathological understanding, in prognosis or in treatment, as the treatment is much the same in other forms of insanity; the pathology is vague and unspecialised, the diagnosis elusive and the prognosis is uncertain.

Clouston's conception of a "tendency to dementia," so often quoted by the supporters of "adolescent insanity," was by no means the only characteristic feature of the psychosis he taught; the strong hereditary predisposition, the frequent relapsing before ultimate recovery, and the extraordinary "cheekiness" being a few others he laid great stress upon. However, there can be no question that Kraepelin has made many important additions to our knowledge of what has been conveniently, and perhaps not altogether ineptly, known as *adolescent insanity*, and it is a matter for regret that his work is not sufficiently appreciated, and that, chiefly because he was unfortunate enough to substitute another term whose literal meaning had not the merit of being descriptive.

Leucocytosis in Acute Mental Disorders. (By Colin F. F.

[1] Meeting of Medico-Psychological Association in London.

M'Dowall, *Jour. Ment. Sc.*, Oct.).—A research suggested by the work of Lewis Bruce. He notes a number of things in corroboration of that investigator, but makes several original observations at the same time. He corroborates Bruce in finding that a low leucocyte count during convalescence means a relapse is to be expected, *cf.* pneumonia. He alludes to a familiar phenomenon most commonly seen in cases of insanity with phthisis—that the patient becomes suddenly sane when on the verge of bodily dissolution. He finds that in such cases a well-marked leucocytosis exists. He quotes from Bianchi that "recovery may be instantaneous and happen in consequence of intercurrent diseases, blood-letting, pleurisy or pharyngitis"—an observation long known in this country in connection with the occurrence of erysipelas or typhoid fever in asylum patients, and taken advantage of by Bruce in suggesting his thyroid treatment of insanity, devised over fifteen years ago, and, if I mistake not, the basis of all his brilliant researches. He again corroborates Bruce in finding in every recent primary case of *excitement with confusion* (acute mania) and *depression with excitement* (excited melancholia) that there is a leucocytosis with a polymorpho-nuclear count of over 75 to 80 per cent. He believes the conditions to be identical diseases resulting from the same toxæmia. But in this connection his illustration of the variability of the effects of alcohol on different brains can scarcely be considered relevant to his argument. Bruce says leucocytosis in *depression without excitement* (acute melancholia) means the existence of some concomitant disease; M'Dowall believes that it may be found to be a definite reaction were the cases examined early enough. He also believes *eosinophilia* to be of great importance in prognosis, and regrets the conflicting views of other observers. In those cases of *excitement with confusion* which recover, there is invariably an *eosinophilia* early in the disease, varying, he says, from 4 to 10 per cent. This, he further believes, is toxic in origin, since in health there is a reduction of eosinophiles during excitement and exertion. In favourable cases the *eosinophilia* continues. The eosinophile is rarely found in bad cases, but reappears in diminished numbers as dementia develops. In cases of *depression with excitement* the eosinophile is often entirely absent during the acute stage, and in "*katatonia*" (as he understands it) it is always absent throughout the entire disease. He has never found an *eosinophilia* in those cases which make rapid recovery, and so is unable to confirm Bruce's observation. In the acutely insane a leucocytosis of over 18,000 remaining constant for over a month without *eosinophilia* is bad for prognosis. He is in agreement with Bruce when he notes that if the leucocytosis falls instead of rising after the acute stage is past, the prognosis is bad, and especially bad if the polymorph percentage is below 50. On the other hand, he himself believes that the presence of the eosinophile cell in the acute stages of

the disease is a hopeful sign, but a still more favourable sign is the combination of a high *leucocytosis* and *eosinophilia*. An *eosinophilia* with a low *leucocytosis* indicates a slow convalescence but an ultimate recovery.

Epilepsy.

Dr. Alan M'Dougall,[1] in a paper on the "Principles of Treatment of Epilepsy," said one must use remedies not mentioned in the pharmacœpia in dealing with confirmed epileptics. They should be placed in colonies where they are not despised by the epileptic community as among the ordinary public. In his colony the epilepsy, as fits, is ignored, and the cravings to be useful and comfortable ("egoism and egotism," he calls them) are satisfied. Bromides are only used in relation to the mental condition, not with regard to the fits. To stop the fits with bromide, he said, in some cases might be to convert a docile man into a "murderer."[2] The fits, he believes, are to the patient's benefit. In the discussion which followed conflicting opinions were expressed on the subject of segregation, practised in England but not in Scotland, though the opinion as a whole was one in favour of colonies. Mention was made by Dr. David Orr of Cenis's method of treatment, which consists of administering to patients their own serum or that of other epileptics.

Juvenile General Paralysis.

Joffroy recently (*L'encéphale*, juillet) showed a young man, 23 years of age, dwarfish and infantile, in whom the epiphysial cartilages still existed, although, curiously enough, dentition had been completed. During the first six months in the asylum he had made remarkable progress, even learning to read and write. He then became stupid and indifferent; tremors of tongue, lips and hands appeared, along with typical disarthria, inequality of pupils, with fixation to light. In the cerebro-spinal fluid pathological albumen and lymphocytosis were found. He was not a general paralytic on admission. Joffroy thinks that the extraordinary aptitude for learning exhibited during the first six months was due to the state of mental exaltation in the "pre-paralytic" period. Another case in his practice showed, in addition to other signs of juvenile arrest, a persistence of the epiphyseal cartilages in the bones of hands and feet. It is this failure of ossification, as shown by radiography, which ought to determine the diagnosis of juvenile general paralysis, and not the arbitrary distinction by mere age. In this case the administration of thyroid increased the patient's height by 3 centimetres in three months. Joffroy still maintains that hereditary syphilis

[1] Meeting of Medico-Psychological Association in London.

[2] In this connection one may note the effect of deprivation of salt in a case of epilepsy by Courmont and Crémieu, where the fits ceased, but the patient became delirious and suicidal until salt was replaced.

as a cause of juvenile general paralysis is hypothetical. Cases occur in which neither syphilis in antecedents nor stigmata in the patient can be found. To deny the presence of syphilis would be rash, but to prove its existence is often quite impossible.

NEW BOOKS AND NEW EDITIONS.

Physiological Principles in Treatment. By W. Langdon Brown, M.D. Pp. 344. London: Baillière, Tindall & Cox. 1908.

It is good to be living in the year of grace 1909: the physician, at least, must feel there is a new spirit of hopefulness in medicine, and there are many indications of important advances in the near future. Meanwhile it is needful from time to time to take stock, to ascertain our gains, if any, during the recent past, and to find out in what direction scientific effort will be most profitably applied in the next few years. Dr. Langdon Brown is a physician who has not only been engaged in practice, but has been teaching physiology during the last decade, and in this work he has succeeded admirably in the application of the principles of physiology to medical treatment. The twelve chapters deal each with a well-defined subject, in regard to which there has been much work and discussion of late, and many hints are given which will be very beneficial in practice; at the same time, thought is stimulated, and interesting explanations of various medical problems are offered. The first chapter is taken up with organotherapy—and here there are many new things. The success in treating the troublesome itching of jaundice by thyroid extract is explained by its effect in diminishing the formation of bile salts. If it is thought advisable to treat Graves's disease with the serum of a thyroidectomised animal, thyroidectin in 5 gr. doses three times a day is recommended as very much cheaper than rodagen, but Dr. Langdon Brown is not satisfied that this treatment is very satisfactory. The discussion of the use of adrenalin is very full and very important, and we would advise our readers to study carefully its advantages and its risks, the latter mainly after intra-venous injection. The chapter on the Rational Treatment of Gastric Disorders opens with a discussion on the nervous and chemical factors in digestion, and practical deductions are drawn therefrom. Principles of treatment in deficient and excessive acid secretion and in gastric ulcer are then given. The author is most favourably impressed with the results of Lenhartz's treatment, in the latter condition, by iced milk and iced raw eggs; the discomforts and difficulties of rectal feeding are thus avoided. Various other stomach conditions are then discussed. Amongst the other headings we note "The Work of the Pancreas," "Uric Acid and the Purin Bodies," "Oxal-

uria, Phosphaturia and Albuminuria," "Glycosuria and Diabetes," "Intestinal Intoxications." In this last he exposes the flimsy basis of the theory by which intestinal intoxication is invoked as a *causa morborum*. Three sections are devoted to irregular action of the heart, the vasomotor system in disease, and cyanosis. The *comparative* value of blood-pressure readings is emphasised, but William Russell's position in regard to the importance of the thickness of the arterial wall is virtually allowed to be a sound one. The last chapter deals with the *rôle* of calcium in the body. From this brief summary it will be seen that this handy book is exactly the help wanted by busy men who wish to have put before them a post-graduate course of lectures on recent advances in medicine. One adverse word of criticism must be allowed. It is annoying to find at the head of every page the title of the book instead of the subject dealt with on that page, or at least the title of the chapter.

Dreschfeld Memorial Volume. Edited by E. M. Brockbank, M.D. Manchester: At the University Press. 1908.

This handsome volume is composed of a series of original articles, dedicated by his colleagues and pupils to the memory of the late Dr. Julius Dreschfeld, and one can conceive of no monument more appropriate to so enthusiastic and untiring a teacher, investigator and physician, than such a *Denkschrift* as this. The volume opens with a short appreciative memoir of Dr. Dreschfeld. Born in Bavaria in 1845, he emigrated to Manchester in 1861, and studied at Owens College, Wurzburg, and Vienna, served in the Austro-Prussian War of 1866, and returned to Manchester in 1869 to practise and teach his profession. His indefatigable industry is attested by the bibliography of his published works appended to the memoir. ". . . his work was everything. Personal comforts he utterly disregarded; the calls of his family or of friendship was also brushed aside when there was work to do, and he even would not give in to the demands for mere bodily and mental rest which his failing health during later years must have made more or less urgent. Thus to the end!"

The papers which compose the bulk of the volume have been reprinted from the *Manchester Chronicle*, vol. xiv., and they are of both interest and permanent value. Dr. Wright contributes a beautifully illustrated account of some of the rarer joint affections, including hæmophilia. Dr. Reynolds describes five cases of intermittent claudication, and Mr. Thorburn discusses the symptoms due to cervical ribs. It seems that Dreschfeld was one of the first to appreciate the possible significance of cervical ribs, and it was a suggestion of his which led Thorburn to investigate the subject and publish his paper on it in 1904.

There is a series of papers on pathological and chemical subjects—cholesterine, cholesterol, phosphorus poisoning, and gas-containing cysts—by Drs. Moore, Edgeworth and Walker Hall, White, and Mair respectively. Lorrain Smith describes a case of hæmolymph glands, and concludes that in this instance the hæmolymph gland was merely an ordinary gland into the stroma of which blood had found its way. The last paper in the volume is on the milk supply of Manchester, and is from the pen of Professor Delepine. All the papers in this volume—we have not space to mention each of the nineteen it contains—are of more than usual interest, and Dr. E. M. Brockbank deserves to be congratulated on the success which has followed his effort to produce a memorial worthy of Dreschfeld.

Clinical Lectures on Neurasthenia. By T. D. SAVILL, M.D.(Lond.). Fourth Edition. Pp. 226. London: Henry J. Glaisher.

FIRST published in 1899, Savill's volume on Neurasthenia is now in its fourth edition. It is in the form of lectures, and, since its first appearance, has been gradually rearranged as the conception of the subject has changed and advanced.

Neurasthenia is now more or less well defined symptomatically, with definite cerebral and spinal sympathetic symptoms. Dr. Savill, however, attempts to go further, and claims that in a large proportion of cases neurasthenia is preceded by conditions sufficient to account for the symptoms. Its treatment becomes therefore more hopeful, the elimination of the antecedent affections relieving or curing the neurasthenic symptoms.

Among the toxic causes he thinks gastric disorders, influenza and oral sepsis are the chief, and, in addition, the increased addiction of the masses to alcohol is an important predisposing factor. It engenders in the progeny a weakness in the nervous system often resulting in neurasthenia and other nerve diseases.

In support of his views he details a wealth of clinical material, and his results go far to support his reading of the pathology of the condition.

Though as yet probably not receiving general acceptance, the book is well worthy of study to those interested in this common and often intractable malady.

Principles and Practice of Medicine. By ARTHUR R. EDWARDS, A.M., M.D. Pp. 1328. Illustrated with 101 Engravings and 19 Plates. Edinburgh and London: William Green & Sons. 1908. Price 30s. nett.

To write a text-book on Medicine is no easy task, and the author is to be congratulated in bringing before the profession a book that will

bear comparison with the leading and most widely-read treatises on this subject. It would be difficult to find a book of equal size that embodies so much of the knowledge of medicine, for it includes in its pages most of the recent advances in medicine, and gives an unusual amount of space to medical treatment. Prescriptions that have been found useful to the author are quoted in abundance, and in dealing with many diseases surgical indications and their results are introduced. The book is exquisitely bound, and the printing is large and typed on good paper.

The volume is divided into eleven sections, commencing with the specific infections, and in order dealing with diseases of the circulation, respiratory tract, digestive tract, kidney, blood, ductless glands, constitutional diseases, nervous system, intoxications, and, lastly, diseases due to animal parasites. The historical aspect of each disease is freely discussed, and the authors who noted any particular symptom are frequently mentioned. One is surprised to find certain omissions, which detract somewhat from the excellence of this work. No mention is made of Wright's treatment by vaccine-therapy, nor of his method of obtaining the opsonic index; no mention is made of Calmette's ophthalmo-tubercular reaction; no mention is made of the recent work of M'Kenzie, Wenkebach and others in observing cardiac affections by polygraphy, and no mention is made of Cammidge's reaction in chronic pancreatitis. The book is full of suggestive reading, and the author's views of treatment are freely discussed. Chapters are written on various tropical diseases not usually described in medical text-books. We can thoroughly recommend this manual to student, post-graduate and practitioner alike, and as a text-book we believe that it can be grouped along with those excellent treatises that have lately been written by physicians and surgeons in America.

On Infantilism from Chronic Intestinal Infection. By C. A. HERTER, M.D., Professor of Pharmacology and Therapeutics, Columbia University. Pp. 118. New York: The Macmillan Company. 1908. Price 4s. nett.

MOST of those who have been long occupied in the study of children and their diseases will readily recall a number of cases of what Dr. Herter describes as "Intestinal Infantilism." They are pale sallow-faced children who often look scarcely more than half their real age, with rounded puffy features, short necks, big bellies, weak flabby muscles, and chilly extremities. They are not at all mentally defective, but have a languid, wearied air; and there is a history of more or less severe recurrent diarrhœa, usually with much fat passed in the motions. These children do little credit to their physicians, and mostly end as delicate, cachectic-looking dwarfs. The pathology of the condition has hitherto

remained quite obscure; and usually the treatment has been directed in a general way against the diarrhœa and towards improving the health by tonics. The only advance in recent years has been made by Dr. Byrom Bramwell, who found that, in one very marked case of the kind, the pancreatic secretion was in abeyance and that administration of pancreatic extract removed the symptoms of infantilism rapidly and, with them, the general debility. This treatment, however, fails in most cases.

Dr. Herter has found, as the result of an immense amount of careful and laborious work, that this form of infantilism is associated with a chronic intestinal infection which is characterised by the overgrowth and persistence of bacteria which normally belong to the nursing period of life (*i.e.* organisms of the B. bifidus and B. infantilis type, and certain cocci which are all Gram-positive). Along with this there is a great scantiness of the normally present B. coli and B. lactis aërogenes. When a case recovers, he finds that the abnormal bacilli disappear and the normal forms reassert themselves.

In the urine an excess of putrefactive products of intestinal origin appear, and the action of these products on the central nervous system and on the muscles accounts for the symptoms of intoxication observed. Examination of the fæces shows impaired fat absorption and a great loss of calcium and magnesium compounds. This defective absorption of nutritive material helps to account for the retarded development.

Dr. Herter believes that the condition is due to the abnormal bacilli setting up a state of chronic inflammation in the lower part of the small intestine and in the upper colon, and that this leads to the imperfect absorption of food-stuffs as well as to the intoxication.

The main object of treatment is therefore to modify this abnormal intestinal flora; and it may be attempted by general hygienic, dietetic and pharmacological measures. Apart from active treatment, the disease is not likely to be recovered from.

The general hygienic measures indicated are a temperate, equable, fairly sunny climate, soothing human surroundings and limited companionship, with fresh air and moderate exercise.

The diet is the most important part of the treatment. Great care has to be taken with regard to carbohydrates, which are apt to be very badly borne, and which readily occasion severe relapses. Fats, also, must be carefully limited in amount. The proteins which are best digested are those of milk. The use of gelatine in the diet is of great value. The products of its decomposition in the bowel cannot contribute directly to the intoxication which is feared, and its administration is followed by an increase in weight.

The drug treatment is not of great importance. It consists in the careful use of alcohol, cathartics, lactates of calcium and magnesium, and phosphoric acid or acid phosphate of soda.

Although small in bulk, Dr. Herter's book is one of rare merit and value. It is a record of splendid work described with great modesty and reserve; and its study can scarcely fail to act as an inspiration to others to follow his lines of work.

Reports of the Society for the Study of Disease in Children. Vol. VIII. Session of 1907-1908. Edited by GEORGE CARPENTER, M.D. Pp. lxxxviii. + 504. With 17 Plates and 66 Text Figures. London: J. & A. Churchill. 1909. Price 12s. 6d. nett.

THIS handsome and well-illustrated volume represents the work done by the Society during its eighth session, which was the last year of its independent existence. The negotiations for its becoming the Children's Section of the Royal Academy of Medicine have now been happily completed. The *Transactions of the Society* are prefaced by an account of its origin and progress up to the present time, from which we learn that its course has not always run smooth, and that it has had a good deal of hostile criticism to live through.

The most noteworthy of the contents of the volume is certainly Sir Watson Cheyne's very admirable and suggestive Wightman Lecture on "The Defensive Arrangements of the Body as illustrated by the Incidence of Disease in Children and Adults." The series of papers on various aspects of "Inherited Syphilis" is also worthy of special attention. These are by such well-known authorities as Mr. Clement Lucas, Dr. Geo. Pernet, Dr. H. G. Adamson, Mr. Sydney Stephenson, Dr. Leonard Guthrie, Mr. Tubby, Dr. George Carpenter, Dr. Shuttleworth and Dr. G. A. Sutherland, and were read in connection with a special meeting called to discuss this subject. In its new position as a section of the Royal Academy, the Society is to continue its excellent practice of holding occasional meetings out of London. We note with interest that one of these is to be held in Edinburgh in the course of next summer.

NOTES ON BOOKS.

TO eye-strain and floating kidney as causes of nervous disease we must now add dental mischief. Such, at least, is the view Dr. Upson expresses in his *Insomnia and Nerve Strain* (G. P. Putnam's Sons, New York, 1908, 6s. nett.), though we must do him the justice of saying that he appears to claim for an impacted molar a more important place in etiology than he concedes to an erratic superior oblique, or a kidney which has gone astray. He quotes a number of illustrative cases, and while it is credible that symptoms approaching mania may be caused by the toothache, and cured by a visit to the dentist, the

description of a similar happy result in dementia præcox only leads us to question the diagnosis. The latter part of the book seems to be an interpretation of normal and abnormal nervous manifestations in terms of electrical phenomena, but we confess we are in the dark as to whether in his use of such expressions as "circuit," "potential" and "rheostat" the author is merely drawing analogies, or describing events which he supposes actually to take place, and mechanisms which he believes exist.

Electrolytic solutions of metals has been introduced into therapeutics by Professor Robin of Paris, but, though it is now several years since he first drew attention to them, their value has not been generally admitted. The solutions contain small traces of metal in a state of extremely minute division, and their action is believed to depend on their physical peculiarities rather than on their chemical properties. It seems to be a matter of indifference which of several metals is employed; gold and palladium are the favourites. Robin has now published as *Les Ferments Mètalliques* (Paris, J. Rueff, 1907), a small brochure descriptive of his results. The solutions are said to have a marked effect on metabolism, and to have acted beneficially in many acute diseases—pneumonia in particular. Robin offers details of a number of cases in support of the view that metallic ferments are really efficacious, but, after having read the evidence, we confess that for the present we incline to the Scottish verdict "not proven."

E. Merck's *Annual Report* for 1907, which has just reached us, is an impartial review of recent advances in pharmaceutical chemistry and therapeutics. It is evidently compiled with great care, and is an exhaustive review of the literature of a large subject. We are asked to state that copies may be had free on application by any medical man.

Nearly one-third of the first volume of the 18th series of *International Clinics* (Philadelphia and London, J. B. Lippincott Company) is devoted to summaries of the progress of medicine and surgery. Treatment is from the pen of Dr. Stephen, Medicine by Drs. David Edsall and Nisbet, and Surgery by Dr. Bloodgood. These synopses, particularly the last, are unusually well done, but they encroach considerably on the space given to clinical articles, on which the reputation of the *International Clinics* has been built up. The original papers in the present volume cover the subjects of Treatment, Medicine, Surgery, Gynæcology, Neurology and Pathology. The principal contributions to the first of these are Bogg's paper on Coagulation of the Blood, and Dingwall Fordyce's article on The Opsonic Index in Rheumatism, which tends to support the specific

character of Poynton's organism. Deaver has an interesting article on The Surgery of the Gall Bladder. Neurology is represented by a paper on Fracture of the Spine, by Walton; and pathology, Flick's article on Tuberculosis, and Deaderick's paper on Hæmoglobinuric Fever. The papers, as a whole, are scarcely so interesting as those which we usually find in *International Clinics*, and we again repeat that we are sorry to see abstracts, however good, occupying so prominent a place. Year books of progress we have in plenty, but the *International Clinics* series struck out a line of its own, in which it was *hors concours*, and we trust that it will not hastily depart from it.

The Transactions of the Association of American Physicians (vol. xxii., Philadelphia: printed for the Association, 1907) contains, as usual, a number of papers of very great interest. The membership of the Association is limited, and the names on the list comprise most of the best known American physicians, so that the proceedings of the Association really epitomise the results of a year's research on pure medicine. The forty-eight papers in this volume cover a wide field. A larger number are devoted to opsonins than to any other single subject, and one may take the opinions expressed in them as representative of the best American work. We find that it is held that, great as has been the stimulus which Wright's observations have given to the study of phagocytosis and vaccine therapeutics, the technique of estimations of opsonic indices is too inaccurate to compensate for the length of time it requires. Among other papers of special interest Dr. Dana's article on Aphasia may be mentioned. He favours the older views as to the localisation of the speech centres, and does not consider that Marie has proved the contentions with which he lately disturbed the calm of the neurological world. Christian describes the histology of six cases of multiple myeloma. There are two articles on Acidoses, by Jostin and Folin, and a series of papers on Arteriosclerosis, by Adler, Thayer and Huegel. The value of the communications is enhanced by the reports of the discussions to which they gave rise being included in the volume.

This is not the only occasion on which we have been able to speak in terms of praise of the *Practical Medicine Series* of year books (Chicago: The Year Book Publishers). Volume vi., for 1908, covers a part of general medicine, viz. Infectious Diseases, and Diseases of the Digestive Organs and their Adnexa. The volume is edited by Drs. Billings and Salisbury, under whose supervision a readable epitome of the work of the year has resulted. Recent advances are fully chronicled; as instances we may refer to the descriptions of typhoid carriers, anaphylaxis, the benzedin test for occult hæmorrhage, the various new gastric tests, and

the ocular reactions in typhoid fever. The volume is well arranged, convenient in size, and is altogether a type of year book essentially and admirably adapted for the use of practitioners who are desirous of keeping abreast of current advance in medicine.

In *Die Percutane Entgiftung* (Spielhagen & Schürich, Wien, 1908) Dr. Schürner v. Waldheim rides a hobby to death. That substances inimical to health are excreted by the skin is a proposition the accuracy of which none denies, but to rear on it a new system of therapeutics, as the author does, and to profess to cure all manner of diseases by arousing to activity the cutaneous function, serves only to discredit what within proper limits are very useful methods of treatment. The larger part of the book consists of an historical sketch of the views of physicians from Hippocrates down to the days of Dr. Jaeger, whose apostle Dr. Waldheim is. Dr. Waldheim's statement that each disease has its characteristic odour is rather far-fetched, and his suggestion that the armamentarum of the clinical instructor should include pads of wadding which have been soaked in the axillary secretion of patients, whereby the olfactory senses of students might be educated, strikes us as fantastic, not to say unsavoury. We doubt whether many readers will have patience to wade through the book.

Diaries.—Each New Year brings us a supply of these. Some of them are purely advertisements, and are of little value, others are largely of the same nature, while others contain, in addition to the advertisements, a considerable amount of useful information in a handy form. Judging by our experience in Edinburgh, the presentation diary which is found most generally useful is that issued by Messrs. Scott & Bowne. It is of a handy waistcoat-pocket size and is very useful for noting engagements.

The Maltine Manufacturing Co. also send round a very useful diary. It is too large for the pocket, but makes a useful desk notebook. Burroughs Wellcome & Co.'s writing list is also very popular, though the space devoted to advertisements might, we think, with advantage be curtailed.

From Messrs. John Walker & Co. we have received a number of samples of their well-known diaries. They are all very neat and handy, and the person who is not able to get exactly the diary he needs from Messrs. Walker must be exceedingly hard to please.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The Poor Law Commission's Report.

THIS Report marks the opening of a new era in the social history of Great Britain and Ireland. "In 1834," says Green, "the growing evil of pauperism was checked by the enactment of a New Poor Law." This law followed on the report of the Commission of 1834. The Report of 1909 is the comment of history on that "New Poor Law." And that comment, whether we take it in the words of the majority or in the words of the minority, is decisive—the Poor Law and the Poor Law organisation must be swept away. The administrative machinery set up in 1834 has been tested for seventy years, and has ended in multiform failure. Fitted apparently for the problems of its own time, it fits no longer the problems of our time. The present report is not unanimous. Of the 1238 pages, 520 pages are given to the minority. This means a fundamental difference in points of view between the minority and the majority. But both reports are at one in the decision to abolish the Boards of Guardians of England—646 Boards, with 24,000 members. A proposal so drastic has rarely been presented to Parliament. But the decision has been taken after three years of strenuous investigation. The evidence, we believe, will fill some nine large volumes.

Of the 14 Commissioners who sign the Majority Report, 5 sign it with not unimportant reservations and dissents, sometimes on matters of principle, sometimes on matters of detail. Of the remaining 9, 2 are Irish Commissioners, 2 are Scotch Commissioners, and there will be separate reports for Ireland and Scotland. This leaves only 5 unanimous Englishmen. The Minority Report is signed by 4 unanimous Commissioners—Mrs. Sidney Webb and three others. Counting of heads is not a final test of authority, but the number of dissents, especially when we look at the dissentients' names, seriously impairs the moral effect of the Majority Report, and tends to increase the importance of the Minority. In two recent Royal Commissions within the last twelve years the Minority Report became the accepted report of the general public, and if unity of purpose, closeness of analysis, trenchancy of argument, and definiteness of proposal are to count for anything, the present Minority Report has all these, and will repay the most careful scrutiny. It has also been issued in book form by Messrs. Longmans, edited with an introduction by Mr. and Mrs. Sidney Webb, who name the first volume *The Break-up of the Poor Law*, and the other *The Public Organisation of the Labour Market.*

Briefly, the difference in standpoint between the majority and

minority may be put thus—the majority propose to displace the present Poor Law organisation by an elaborate system of non-elective bodies, partly selected by the County and Town Councils, partly selected by voluntary organisations; the County Councils and Town Councils having to find the funds, but having no power of controlling the expenditure. These composite organisations are to have full charge of all relief, including able-bodied unemployed as well as sick, infirm, disabled, vagrants, &c. The minority, on the other hand, propose to take advantage of the fact that, in the past seventy years, many new organisations have grown up in response to social necessities — Public Health Authorities, Education Authorities, Police Authorities, Pensions Authorities, Unemployment Authorities, Lunacy Authorities—all of which deal with certain sections of those needing public assistance, but all more or less overlapping the present Poor Law. The minority would develop all these lines of social growth, assigning medical relief to a single Health Authority, children to the Education Authority, and so on, thus relieving the present inefficient Poor Law organisations, which would gradually cease to exist. Unemployment the minority would place, as the majority to a certain undefined extent does, under the direct control of a Central State Department—the Ministry of Labour; unemployment being a special problem, and not capable of solution by a Destitution Authority, under whatever name it may go. This is the "break-up of the Poor Law."

It is impossible in this preliminary note to give any conception of the immense mass of fact and argument contained in both reports, which will be a mine of suggestion for many years to come. In a future article we may offer some account of medical relief as it will be affected by the new proposals. It may be added that the minority do not accept the majority's view that the failure of the Poor Law has been due to the *personnel* of the Boards of Guardians and to the elective character of the Boards. The minority retain to the full the representative constitution of the Public Health and other authorities that are to take over the highly-specialised functions of the Poor Law. Only one new official is created—the Registrar of Public Assistance.

The Royal Medical Dinner.

THE annual dinner of the Royal Medical Society, which now takes place regularly in the Society's own hall, has become of late something of a function. Not only is the dinner graced by the presence of representative citizens, such as the Lord Provost, the Moderator, the Principal of the University, and the Presidents of the Royal Colleges, but the guest of the evening is always some medical man of outstanding eminence, whose words, in proposing the toast of the Royal Medical Society, are always of special interest. Two years ago we were able to publish Professor Osler's speech, and this year we are fortunately able to present to a larger audience those important words on Medical Education which Sir Donald MacAlister addressed to the Society on 9th February (see p. 258).

Efficiency and Proficiency.

Among the many points of interest on which Principal MacAlister touched, not the least important was his allusion to the words with which we head this paragraph. It is becoming increasingly evident that if for the minimum of "efficiency," which the General Medical Council requires of those who seek admission to the Register five years of study are required, those teaching bodies which aim at a higher standard of "proficiency" must seriously contemplate either an extension of the curriculum or some modification in its arrangement. It is an open secret that the latter alternative is at present the subject of careful consideration among the more active teachers in Edinburgh, and that a scheme for the re-arrangement of the first two years of the curriculum has been drafted. Those responsible for it recognise that it is not possible to give a thorough training in Botany and Zoology in the time at present devoted to those subjects, and they have suggested in substitution a course on Biology which might prove useful as an introduction to the subjects of Human Anatomy and Physiology.

They have anticipated Sir Donald's hint that the latter (practical) half of the curriculum must not be encroached upon by the earlier subjects, and by a re-arrangement of the classes they provide that the examination in Anatomy and Physiology shall be taken two years and three months after the commencement of medical study. This leaves to the ideal student nearly three years for his more purely professional subjects, and the investigating committee is of opinion that that period of time can be so arranged as to permit the ideal student to attain a certain standard of proficiency. They recognise that it is only to the ideal student—the hard worker who passes all his examinations at the earliest opportunity—that the regulations apply; those who fall by the way should not be encouraged by cramming to make up the loss, to the detriment of their real education.

———

The New Curriculum.

As the interests of the medical school and of the teacher are so inseparably associated with those of the student, it is obviously desirable to know how the latter is affected by the introduction of the new curriculum. The administration of the curriculum in the fourth year has evoked a trenchant criticism in a recent number of *The Student*, where certain of the weak points of the present system are exposed. The defects may be said to fall under three headings:—the overcrowding of the day with classes, the lack of co-ordination in teaching, and the undue preponderance of theoretical teaching at the expense of practical work.

The writer states that the student in his fourth year is supposed to attend classes for nine and a half hours daily. In clinical lectures and in cliniques, too little facility is afforded for seeing and examining the patients, and the tutorial classes are denounced as mere cram

classes. Yet the student attends the classes because he recognises that theoretical knowledge is of paramount importance in the professional examinations. The writer of the article makes an urgent appeal, with which we cordially sympathise, that the student's burden of theoretical instruction may be lightened, and that he may be given more time and opportunity for practical work.

Nurses' Registration.

THE question which is at present agitating our nurses and those interested in their training—and who so interested as the medical profession—is briefly expressed in the words "Shall Scottish Nurses have Home Rule?" Is the whole profession of nursing in the British Islands to be regulated by a council in London on which they and the medical profession of Scotland shall each have one member—the latter, by the way, nominated by the British Medical Association, a body not greatly in favour in Scotland just now—or shall they, in conjunction with the medical profession, apply to the Legislature to establish an independent council for Scotland?

After carefully considering the Bill which passed through the House of Lords last session, those most actively interested have come to the conclusion that the latter alternative is to be preferred.

Meetings of the superintendents, medical and nursing, of the larger Scottish hospitals have been held, and they now place before the profession and the public a draft Bill for the purpose. The signatories to the covering letter accompanying their reasoned statement and the draft Bill are the Lady Superintendents of the Royal Infirmary, Edinburgh, and the Glasgow Royal Infirmary, and the Medical Superintendent of the Western Infirmary, Glasgow.

A perusal of the two Bills discloses one important point of difference, viz. that the English Bill gives to the proposed council the conduct of the examination and the appointment of the examiners, while the Scottish Bill only takes power to regulate and supervise by means of the appointment of inspectors. Incidentally, it appears to us that the Scottish Bill more adequately recognises the prime importance of training, and the essentially ancillary nature of the nursing profession, while the English Bill lays most stress on examination, and seems to us to tend in the undesirable direction of erecting nursing into an independent profession.

Further, we are informed the fee proposed for examination and registration in the English Bill (five guineas) is regarded in Scotland as unnecessarily large, and if the estimated annual increment of the register is anything like correct, the Nursing Council will have an income which may well make the General Medical Council envious.

There are one or two amendments which we think would improve the draft, but, on the whole, the proposed Bill seems reasonable and worthy of the support of the medical profession.

THE TREATMENT OF VARICOSE VEINS OF THE LEG.[1]

By J. M. COTTERILL, President of the Royal College of Surgeons of Edinburgh,
Senior Surgeon to The Royal Infirmary.

Mr. President and Gentlemen,—Your Council have suggested for our discussion to-night the subject of the treatment of varicose veins of the lower extremity, and they have kindly asked me to open the discussion.

It is proposed that we should confine ourselves strictly to the question of *treatment*, and therefore I shall only touch on the pathology and etiology of the subject in so far as they have a direct bearing on the question of treatment.

For the sake of convenience we may consider the question under two heads—

1. The treatment of varicose veins, as such.
2. Their treatment when complicated by phlebitis or thrombosis, or both.

The question as to whether a varicose vein can ever be *cured* in the strict sense of the word will, of course, depend largely on the extent of the changes which have taken place in its wall.

In the later stages, when fibrous cicatricial material has replaced the muscular and elastic constituents, it is hardly possible that real cure can happen. It is, however, interesting in this connection to note the way in which healthy veins can accommodate themselves to altered circumstances. The enlargement they undergo when collateral branches take up the work of an obstructed main vein is known to us all; while, on the other hand, I have often been struck, while operating on cases of pernicious anæmia, with the extremely shrunken condition of the veins at the bend of the elbow, frequently having on this account to resort to the saphena vein in the thigh, being unable to force my finest cannula into the veins at the elbow.

With regard to the etiology of varix, we may well remember what Billroth pointed out, viz. that *sudden* obstruction to a vein causes œdema, *gradual* obstruction to a vein causes a free collateral circulation; but that neither sudden nor gradual obstruction can cause varix without the intervention of some other factor, hereditary or otherwise.

[1] Read before the Edinburgh Medico-Chirurgical Society, 3rd February 1909.

In order to found our treatment on a rational basis we must glance for a moment at the causes of varix, as far as we know them, and we may conveniently divide them into what we may call—

1. *Predisposing causes*, such as the hereditary tendency, pregnancy, a weak heart, a bad portal circulation, and so forth; and

2. *Exciting causes*, such as pressure above by tumours, garters, &c., long standing, excessive exercise of the calf muscles, as seen in professional runners, and so forth.

In connection with pregnancy it is of course well known that, apart from the pressure of the large uterus in the later months, there is a decided tendency to varix formation in the early months, while, on the other hand, it must be borne in mind that many cases of large and long-standing abdominal tumours are not complicated by varix in the lower extremity.

As to treatment, then, it is evident that it is, in the first place, necessary to consider and, where possible, to remove or modify, the cause, whether predisposing or exciting.

Removal of the cause, however, is often impossible, or, if possible, does not cure the disease when fully established, and other treatment therefore may become necessary.

But before beginning local treatment it is well to remember—

1. That if local treatment by bandaging be begun it will probably be necessary to continue it constantly afterwards.

2. That local treatment is not necessary, or even desirable, unless the varix is getting worse or causing troublesome symptoms, such as pain, cramps, œdema, eczema, or the like.

3. That while some 80 per cent. of cases begin before the age of 25, there is frequently an inclination to improvement, or at least to the condition remaining stationary, after middle life.

The treatment, then, to be adopted in suitable cases may be considered as—

A. Palliative; and *B*. Radical or Operative.

A. *Palliative Treatment.*—Having applied general measures, such as rest, tonics, regulated exercise, cold bathing, and so forth, the palliative treatment consists in the application of some form of local support to the distended veins.

Various more or less ingenious devices, such as pads applied to the saphena vein, with the object of supporting the column of blood, may be dismissed without further notice, for they have not proved successful.

On the whole, a carefully applied Martin's perforated india-rubber bandage seems to me to suit the majority of cases best.

An elastic stocking is of course very convenient, but it has many disadvantages. They are expensive, they soon stretch and get spoilt, and by unequal pressure they may do more harm than good. If the patient insists on wearing them they must be very carefully made and fitted, and frequently renewed.

A Martin's bandage is a very powerful weapon; it must be put on with great care, or it will soon become harmfully tight. It is very important that it should not constrict unduly at the top of the bandage. In some cases it irritates the skin and causes eczema, and in hot weather and hot climates it induces perspiration with its attendant troubles.

For these reasons some surgeons prefer a domette or elastic webbing bandage; but I find that if a Martin's bandage is properly managed it can usually be borne. Scrupulous attention must be paid to cleanliness both of the bandage and of the skin. Non-irritating dusting powders should be applied, after washing the leg, before the bandage is put on, and in some cases the use under the bandage of a white cotton stocking, frequently sterilised, is the best means of preventing irritation of the skin.

B. *Radical or Operative Treatment.*—If, in spite of palliative treatment, the condition gets worse, or if for some reason a bandage or stocking cannot be borne, then it is often advisable to operate.

The indications for operation (apart from thrombosis and phlebitis, which we shall discuss later) are as follows:—

1. It is most satisfactory to operate when the varix affects one vein, or set of veins, of large size, rather than when the smaller veins of the skin are chiefly involved.

2. Operation should not be undertaken, as a general rule, unless the varicose condition reaches fairly well up in the thigh.

An exception to this rule should be made where, in a varix restricted to the lower leg, recurrent phlebitis, ulcer, or the danger of bleeding from a thin walled pouched varix is present.

When there is much distension of the saphena in the thigh the valves of the vein have of course become unable to support the column of blood; this pressure acts prejudicially on the vein below, and calls for operation. The extent to which these valves have been thrown out of work can be readily gauged by Trendelenburg's test. Elevate the limb for three minutes to empty it of blood, then apply pressure over the upper end of the saphena vein; let the patient stand up, and then remove the pressure from the top of the vein, when the whole vein down to the knee will

instantaneously fill with blood from above, if the valves are inoperative.

Choice of Operation.—Trendelenburg's operation of ligaturing the vein in the upper part of the thigh is not, I believe, enough. I prefer the method of Phelps, in which an inch or two is taken out of the saphena high up and also at several other points further down the limb, specially distended portions of vein being dissected out. The collateral circulation in the veins of the leg is too free for Trendelenburg's operation to suffice.

Risks.—These are sepsis and thrombosis, with possible detachment of clot and pulmonary embolism.

To avoid sepsis every possible care must be taken. Michel's clamps are better than sutures. I prefer not to operate when there is an open ulcer, but to get it healed if possible, or at least to render it as aseptic as may be, before ligaturing the veins.

The dangers of thrombosis and detachment of clot are minimised by strict asepsis, rest in bed for three weeks after operation, the careful and gentle handling of the wound, and the avoidance of too much strain on the leg for some weeks after the patient has left bed.

In addition to what has already been said, the chief contra-indication to operative treatment is the thrombosis of the deep venæ comites which accompany the tibial vessels. This happens occasionally from injury to the leg, and is evidenced by deep pain in the calf and œdema of the foot. In these cases the blood from the leg and foot must return by the superficial veins, which, of course, must not be touched.

There may also be certain constitutional conditions present, such as gout, heart disease, &c., which contra-indicate operation.

Results of Operation.—I have records of 59 cases of operation for varicose saphena, and the operations have varied from the removal of small localised varices to the excision of the whole length of the vein from groin to ankle.

All these cases have recovered, and in none have I seen any bad symptoms. Two or three have come back to have the other leg dealt with; in none, as far as I know, has there been any recurrence. I have asked my house-surgeon to communicate with some of these cases, and we have received answers from several. I need not trouble you with these letters, but merely note that *all* the answers we have received were entirely satisfactory, some of the patients declaring that they could now walk 20 miles a day, and stand for long hours at work without discomfort.

The Treatment of Varix Complicated by Thrombosis or Phlebitis.

Owing to changes in the vein wall and retardation of the blood current, thrombosis is of frequent occurrence in varicose veins.

Thrombosis having once started in a varix may spread upwards and give rise to serious consequences—it must consequently be regarded as an important matter and dealt with most carefully. As a rule, elevation of the limb and absolute rest in bed for three weeks or more is the best course to pursue.

If the clot is obviously spreading upwards, and if this appear to be due merely to centripetal addition to the thrombus, brought about by the presence of the clot itself in the vein, it may be advisable to operate by ligature well above the thrombus. If such thrombosis occurs in a varicose vein as the result of some blood change, such as may occur in typhoid, influenza, septicæmia and the like, the ligature may do no good, and may do harm.

A local thrombosis in a varicose vein may, especially in later life, tend to produce a spontaneous cure of the varix.

Phlebitis may occur in two forms—

1. Simple phlebitis—a local inflammation of the wall of the vein, which may terminate in resolution, obliteration of the vessel, or in the formation of a localised abscess; or

2. Infective phlebitis, where there is a spreading infective inflammation of the vein wall and the surrounding tissues, with the formation of an infective thrombus which may soften, break down, and, by being carried into the general circulation, give rise to pyæmia.

In simple phlebitis complicating varix apply soothing applications, such as cold or sedative fomentations, elevate the limb, and keep the patient in bed till all signs of inflammation have subsided. If pus forms, ligature and divide the vein well above the inflamed area, and thoroughly clean out or excise the inflamed portion of vein. If simple phlebitis recurs frequently in a varix it may call for operative interference by Phelps's or some other approved method.

In cases of infective phlebitis, if you can get well above the inflamed area, cut down upon the vein higher up the limb, divide and ligature it, and then proceed to clear out the abscess, excising where possible the affected portion of vein, and rendering the whole infected area as aseptic as possible.

Conclusions:—

1. Remove cause as far as possible.

2. Do not treat locally at all unless the varix gives trouble or tends to get worse.

3. When the varix is restricted to the lower leg try bandaging.

4. When bandaging fails, or when the disease affects the saphena above the knee, do Phelps's or other suitable operation.

5. In thrombosis try rest; if the thrombus is spreading up, operate.

6. In simple phlebitis try rest and soothing means; if suppuration occurs, or the condition is recurrent, operate.

7. In infective phlebitis operate, when the local and general condition of the patient admits of it.

REPORT UPON THE EXAMINATION OF THE BODY OF AN ACROMEGALIC SUBJECT.

By A. CAMPBELL GEDDES, M.D.,
Demonstrator of Anatomy in the University of Edinburgh.

PART I.—THE MACROSCOPIC CHANGES.

I. Introductory.

In December 1899, Dr. G. A. Gibson published the clinical record of a case of acromegaly in the *Edinburgh Medical Journal*. The woman who was the subject of that record, after an uneventful history of a further eight years, died in the Royal Infirmary, Edinburgh.

The body was procured for the Anatomy Department of the University, and through the kindness of Professor D. J. Cunningham and Dr. G. A. Gibson, was handed over to the writer for dissection and report.

It was preserved by injection of formalin 30 per cent. solution into the right common femoral and left common carotid arteries. As a result of this injection all the tissues were firmly fixed. Without this preliminary fixation many important observations would have been impossible, but it added to the difficulties of the subsequent histological examination.

The present communication is a report upon the macroscopic and microscopic changes found in the soft parts and in the joints.

II. Report upon the Macroscopic Changes.

Acromegalic Subject.—Female, age 50 years. Length upon table, 5 feet 3 inches; weight, 9 stone 2 lbs.

The general aspect of the body was remarkable. The hair was extraordinarily coarse, long and plentiful. The face was enormous; the nose, big: the mouth gaped; the tongue protruded. The hands and feet were huge; the shoulders, rounded; the chest, flat; and the thighs were slightly but permanently flexed. The skin was of a chalky whiteness, except that of the face, which was freckled.

I. *Examination of the Head.*

The first step in the dissection was to remove *en masse* the soft parts from the skull and face, with the skin and superficial muscles of the neck. A plaster cast of the underlying structures was prepared, and over this the soft parts were carefully stitched. The reconstructed head is preserved in the Anatomical Museum of the University of Edinburgh.

(*a*) *The Intra-cranial Structures.*

The skull cap was removed and the brain extracted. To effect this it was necessary to cut through the mesencephalon (see Plate I.).

The condition of the parts in the neighbourhood of the sella turcica was:—

The pituitary was enormously enlarged, and projected a bicornuate mass upwards and to the right.

As a result of the overgrowth of the pituitary the optic chiasma was torn through: the right optic nerve and optic tract were pressed upon and reduced to the condition of a ribbon of apparently fibrous tissue; the oculo-motor nerve of the right side was pressed upon; the fourth and sixth nerves had apparently escaped injury; the right temporal lobe and the base of the brain were deeply indented by the pituitary tumour.

The pituitary was removed from the greatly enlarged sella turcica, when it was found to present for examination two portions:—

(*a*) A portion lodged within the sella turcica which had the shape of a short cone, the apex of which pointed downwards. This portion had the following measurements:—

Height	30·8 mm.
Antero-posterior diameter . .	27·6 mm.
Transverse diameter . . .	29·3 mm.

(*b*) A portion which projected into the general cranial cavity and indented the hemisphere. This portion projected to the right

and consisted of a short stem and two cornua, an anterior and posterior.

The anterior cornu was conoid, and had the following measurements:—

Length (base to apex of cone) .	. 17·8 mm.
Diameter at base . . .	. 15·8 mm.

The posterior cornu was pyramidal, and had the following measurements:—

Length	. 28·2 mm.
Diameter at base . .	. 16·9 mm.

The posterior cornu was, therefore, considerably the larger.

The cornua were separated by a deep cleft, at the bottom of which lay the anterior cerebral artery. Externally, the cornua were marked off from the body of the gland by concurrent grooves in which the internal carotid, the middle cerebral and the posterior communicating arteries were lodged.

The weight of the pituitary was 15·55 grammes. The normal dimensions of the adult pituitary are approximately:—

Vertical height . . .	. 5 mm.
Antero-posterior diameter .	. 7 mm.
Transverse diameter . .	. 12 mm. (Piersoll).

The normal weight for the adult pituitary is:—

·35 to ·45 grms. (Testut).
·6 grms. (Boyce and Beadle).

The mass of pituitary was, therefore, increased approximately 30 times.

Brain.—The weight of the brain without the pituitary, but with the pia attached, was 3 lbs. 5½ oz.

The average proportion of the weight of the brain to the weight of the body is as one is to fifty (Obersteiner). Therefore, the weight that the brain should have been is 2 lbs. 8 ozs. (Body weight shortly before death, 9 st. 2 lbs.) The brain mass was, therefore, increased relatively to the body. It has to be remembered, however, that a brain after hardening with formalin invariably weighs more than before hardening.

The membranes were normal.

(*b*) *Report on the Condition of the Extra-cranial Structures.*

The eyeballs were enlarged. It was impossible accurately to measure or to weigh them as they were removed with the mask and built into the reconstructed head.

The cartilages of the nose were enlarged. For a like reason it is impossible fully to describe them.

The teeth, with the exception of the lower central incisors, were carious or absent.

The tongue was very large. Its relation to the mandible is well seen in Plate II. This photograph was taken after the superficial soft parts had been removed, and before the more deeply placed portions had been disturbed.

Unfortunately the tongue had been hardened in a somewhat crumpled position. Its measurements were:—

Maximum length . . .	78 mm.
Maximum breadth . . .	72 ,,

The surface was much cracked and fissured; the papillæ were enlarged.

The tonsils and uvula were much hypertrophied.

The salivary glands were much hypertrophied.

The temporal, the masseter and the pterygoid muscles were large.

II. *Examination of the Neck and Thorax.*

(*a*) *General.*

The thyroid gland was very large. It formed an enormous goitre which, on the left side, reached from the lower border of the mandible to a point behind the manubrium sterni one inch below the level of the upper border of the sternum. It presented, on its anterior aspect, two deep hollows, which corresponded in position to the greatly enlarged inner ends of the clavicles. The veins on its surface were filled with dark blood-clot.

The jugular veins were enormously distended, and filled with dark blood clot.

The thymus was represented by a vascular leaf-like lamina, which lay entirely to the left of the middle line. To the naked eye there appeared to be only a few small areas of thymic substance, the remainder of the lamina being made up of fibrous tissue and fat.

The right lung was healthy, but shortened from above downwards; its lower margin reached only to the seventh rib in the mid-axillary line.

The heart and pericardium were pushed over to the left; the pericardium was distended, and encroached upon the area for the left lung, which from the front was only visible in its upper half.

The convexity of the diaphragm was markedly increased, more especially on the right side, where, a little internal to the mid-clavicular line, it rose to the level of the lower border of the fourth rib.

(*b*) *Particular.*

1. *The Thyroid.*

The lateral lobes of the thyroid were enormously increased; the isthmus was larger than normal, but relatively less hypertrophied.

It measured:—

Maximum length . . .	120 mm.
Maximum breadth . . .	116 „

Its weight was 312 grms. The weight of the normal thyroid is about 30 grms.

2. *The Parathyroids.*

There were five parathyroids, two on the right side, three on the left.

Their weights were:—

1. Right superior . . .	1·8 grms.
2. Right inferior . . .	3 „
3. Left superior . . .	1·7 „
4. Left middle . . .	·5 „
5. Left inferior . . .	2·5 „

Note.—No. 4 is the abnormal one; it lay between the left lateral lobe and the œsophagus. The identity of all five bodies was established by microscopic examination. The right inferior was 23 mm. long, in place of the normal 6 or 7 mm.

3. *The Thymus.*

The thymic area was very vascular; thymic tissue was apparently confined to a few isolated areas.

4. *The Pericardium.*

The pericardium was large; its anterior surface was loaded with fat. When opened, a large amount of sero-purulent fluid, in which lymph flakes were floating, gushed out. Artificially, to produce a corresponding amount of distension, a quantity of approxi-

mately 300 c.c. of fluid was necessary. Owing to the injection of the body with formalin, no culture could be made.

The parietal and visceral layers of the serous pericardium were shaggy with lymph, and presented most typically the appearance of pulled butter. The heart and pericardium were nowhere adherent.

5. *The Heart.*

The heart was removed from the body and cut into three slices. The endocardium and myocardium were healthy.

The measurements of the heart were:—

Breadth of right auricle	71 mm.
Length of ventricular portion—right auriculo-ventricular opening to apex . . .	82 mm.
Length of ventricular portion—apex to pulmonary orifice	90 mm.

Auriculo-ventricular index is 86·6.

In normal hearts the index is between 60 and 80.

The weight of the heart was 531·6 grms. In the healthy female the weight of the heart is to the weight of the body as 1 : 162. The proportionate weight for the heart would have been 365 grms. The increase of mass of the heart was therefore nearly 50 per cent.

The valves appeared healthy; owing to the action of the formalin their competence could not be ascertained.

The foramen ovale was patent, the opening being rather larger in diameter than an ordinary lead pencil. The annulus ovalis formed a strongly marked hood; the relations of the parts suggested that an appreciable proportion of the blood from the inferior vena cava passed directly to the left auricle.

Position of the Heart.

The right border of the heart lay almost exactly in the median line of the body.

The apex of the heart lay 153 mm. to the left of the middle line.

6. The great vessels were healthy.

7. The lungs, apart from the displacements already described, were normal and healthy. The bronchial glands were enlarged.

III. *Examination of the Abdomen.*

Strong fibrous bands attached the great intestine to the parietal peritoneum. The adhesions were especially well marked in the right hypochondrium.

When the abdominal wall was removed, nothing was to be seen but large intestine. The cæcum and ascending colon were gigantic; the transverse colon was large; the descending colon, iliac colon and pelvic colon were normal.

Measurements of Great Intestine.

	Lengths.	Diams.
Cæcum	40 mm.	220 mm.
Ascending colon . . .	860 „	380 „
Transverse colon . . .	350 „	170 „
Remaining portion of large intestine	595 „	75 „
Total length of great intestine .	1845 „	
Normal length of great intestine .	1400 „	

The different portions of the great intestine were recognised by their arteries of supply.

Position and Relations of the Great Intestine.

The cæcum occupied the cavity of the pelvis.

The ascending colon occupied the right iliac fossa, and formed a sigmoid loop which passed diagonally across the abdomen. One convexity was in relation to the liver; the other occupied the left iliac fossa.

The transverse colon had risen in front of the stomach, which was pressed backwards. It had evidently exerted considerable pressure on the liver.

Remainder of Alimentary Canal and Accessory Glands.

The stomach and small intestine were pressed on by the enlarged colon, but were otherwise normal.

The duodenum and the ducts opening into it were healthy.

The liver was of normal weight—3 lbs. 1½ oz.—but pale and fatty.

The spleen was rather large, but otherwise normal in appearance and shape.

Weight of spleen . . .	212·6 grms.
Average weight . . .	195 „

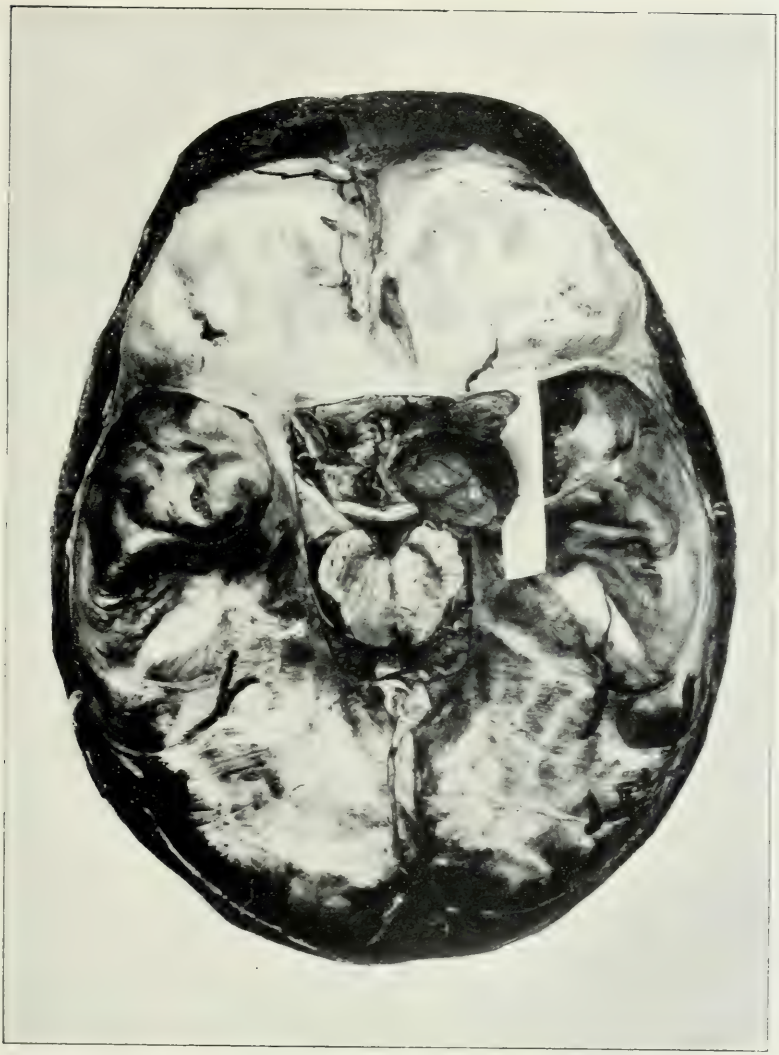

PLATE I.—The interior of the skull after removal of the cerebral hemispheres. A piece of paper has been placed under the edge of the pituitary tumour.

PLATE II. The skull after removal of the soft tissues of the face. To show the form of the mandible and the mass of the tongue.

PLATE III. The upper surface of the fourth cervical vertebra to show the antero-posterior compression of the spinal cord consequent upon the abnormal increase in the size of the vertebral body.

The pancreas was of approximately normal size.

Length of pancreas . . .	180 mm.
Weight	76 grms.
Average length . . .	150 mm.
Normal range of variation of weight	50-120 grms.

The kidneys were very large.

The right weighed . . .	262 grms.
The left „ . . .	269 „
Average weight . . .	130 „

The right was of normal colour and consistence; the left was pale and fatty.

The suprarenal bodies looked considerably larger than normal.

The right weighed . . .	9 grms.
The left „ . . .	9·5 „
Normal weight . . .	6 „

In texture they were normal.

Abdominal Portion of the Sympathetic System.

The bulk of the constituent elements was much greater than normal.

The ganglionated cord was thicker than normal.

The great splanchnic nerves were twice their normal thickness.

The semilunar ganglia were very large.

The right weighed . . .	2·62 grms.
The left „ . . .	3·58 „

The Cerebro-Spinal System.

Owing to a great reduction of the antero-posterior diameter of the foramen magnum, and of the upper cervical portion of the spinal canal, the lower part of the medulla and the cervical portion of the spinal cord were flattened antero-posteriorly. Plate III. shows this condition at the level of the upper border of the fourth cervical vertebra. From the level of the fifth cervical vertebra downwards, the cord was not compressed.

The peripheral nerves were enormously increased in bulk. The anterior crurals were as thick as ordinary great sciatic nerves. As exceptions, the great sciatic nerves were not much thickened.

The nerves of the arm were all greatly increased in size.

The palmar portion of the left median nerve was represented

by a rounded, slightly fusiform, mass, which measured 54 mm. in length and 15 mm. in breadth. From this, the normal muscular and cutaneous branches arose.

Muscular System.

The muscles were on the whole well developed.

The gluteus maximus muscle was partly fibrous. The sacro-lumbar portion of the longissimus dorsi was also partly fibrous.

The posterior cervical muscles were strongly developed.

Articular System.

All the sutures in the cranium were obliterated.

The temporo-mandibular joint was markedly arthritic.

The upper three cervical vertebræ were ossified together, and to the occipital bone.

The joint between the third and fourth cervical vertebræ was movable.

All the other spinal joints were ankylosed, ossification being either partial or complete.

The upper ribs were ossified to the vertebræ.

The sterno-clavicular, the shoulder, the elbow, and the wrist joints were arthritic.

The hip-joints on both sides were arthritic and incapable of full extension.

The knee-joint on the right side was markedly arthritic. The capsule was distended with sero-purulent fluid. The cartilage covering the external femoral condyle was ulcerated.

The knee-joint on the left side was also markedly arthritic, but the effusion was not purulent.

The ankle-joints on both sides were arthritic.

All the joints in the hands and feet were arthritic; some were completely obliterated, the bones showing osseous union.

The Skin.

All over the body the skin was thick and redundant. The subcutaneous tissues were thickened, especially in the hands and feet. The subcutaneous fat on the right heel was 50 mm. thick.

The hair of the head was coarse and thick and plentiful.

The Genital System.

The mammary glands were completely atrophied.

The External Genitals.

The labia minora and the clitoris were unusually prominent.

The Internal Genitals.

The vagina admitted one finger; it was small and straight.

The uterus was small, and markedly anteflexed and anteverted.

Measurements—Maximum length	. .	30 mm.
„ breadth	. .	30 „
Average length	. .	70 „
„ breadth	. .	40 „

Ovaries.

The right ovary was almond-shaped.

It weighed	. . . .	1·5 grms.
Its maximum length was	. .	65 mm.
„ „ breadth was	. .	15 „

The surface was quite smooth, and shows no signs of scars. It felt very dense and fibrous.

The left ovary was represented by a hard rounded fibrous cord.

Lymphatic System.

Throughout the whole body the lymphatic glands were large and numerous.

Summary of the Macroscopic Observations.

1. *The Ductless Glands.*

The pituitary body was thirty times its normal size.

The thyroid body was ten times its normal size.

The parathyroids were largely increased in size; a conservative estimate places the amount of parathyroid tissue at ten times the normal.

The thymus was represented by numerous small aggregations of thymic cells. These areas were very vascular.

The amount of suprarenal tissue showed a 50 per cent. increase.

The ovaries were apparently wholly functionless.

The spleen was slightly increased.

2. *Alimentary System.*

The tongue, tonsils and uvula were enormously increased. The teeth were carious.

The stomach was normal in size, but deformed by pressure.

The small intestine was normal in appearance, but short, and pressed upon by the large intestine.

The great intestine was enormously increased in diameter and in length.

The salivary glands were increased.

The liver and pancreas were of approximately normal mass.

3. *Respiratory System.*

Normal, except that the cartilages of the larynx were unusually large.

4. *Circulatory System.*

There was marked pericarditis.

The heart was increased in mass.

The auricular portion was rather more increased than the ventricular. The foramen ovale was patent.

The great arteries were normal.

The great veins of the thorax were distended.

The veins of the neck and extremities were distended.

The veins of the portal system were distended. The vena cava inferior was empty and collapsed.

The lymphatic glands throughout the body were markedly increased.

5. *Nervous System.*

The brain was increased in mass.

The lower part of the medulla oblongata and the cervical portion of the spinal cord were compressed antero-posteriorly.

The spinal nerves were greatly increased in diameter and in length. The great sciatics were exceptional, being increased neither in length nor diameter.

The palmar portion of the left median nerve was characterised by an extraordinary gangliform enlargement.

The sympathetic system was markedly enlarged.

6. *Muscular System.*

There was hypertrophy of the posterior muscles of the neck:

fibrous atrophy, consequent on hypertrophy (?) of the glutei maximi and of the sacro-lumbar portion of longissimus dorsi.

7. *Genito-Urinary System.*

The kidneys were very large; the left was fatty.
The uterus and vagina were small.
The ovaries were atrophied.
The external genitals were slightly increased in size.
The mammary glands were atrophied.

8. *Miscellaneous.*

The skin was thick and the hair plentiful.

The joints were all affected by rheumatoid arthritis. The right knee was affected with purulent synovitis and ulceration of the joint cartilage.

PART II.—THE MICROSCOPIC CHANGES.

Introductory.

The tissues, it may be recalled, were fixed by the intravascular injection of 30 per cent. formalin. During the period of dissection the body was kept wrapt in formalin cloths, from which evaporation was prevented by covering the whole with waterproof sheeting. Although this procedure was absolutely necessary to permit of the prolonged and laborious process of dissection, it was far from ideal as a preliminary to the preparation of delicate tissues for histological examination.

Portions of every organ and tissue in the body were examined microscopically.

Certain features common to all the sections examined may be noted:—

1. Throughout the whole body the walls of the arteries were definitely thickened;
2. Everywhere there was evidence of great vascularity;
3. Everywhere there was evidence of venous congestion.

I. THE DUCTLESS GLANDS.

A. The Pituitary.

(*Note.*—Pituitaries of individuals dead of diseases in which venous congestion was a prominent symptom were used as guides in the interpretation of the structural alterations discovered.)

On examination, it was found that the great increase in the bulk of the gland was due to a proliferation of the cells of the anterior lobe; the posterior was of apparently normal size, but somewhat flattened by pressure.

The structure of the anterior lobe was similar to that found in venously congested, but otherwise normal pituitaries.

The arrangement of the cells was normal.

The cells were normal in size and in appearance.

There was one large colloid space in the antero-superior region of the anterior lobe, and numerous small spaces in the pars intermedia.

From the microscopic appearances, it would appear that the increased size of the gland was due to an excessive but simple hyperplasia and not to an adenoma.

The methods of staining employed were Mann's long and short methods, hæmatoxylin and eosin, and Van Giesen's stain.

B. The Thyroid.

A large number of sections cut from different parts of the gland were examined. Without exception these showed the effects of venous congestion. In spite of some slight differences in the amount of fibrous tissue found in different sections, and sometimes in different parts of the same section, the general appearances were those of a progressive parenchymatous goitre. Some of the colloid follicles were very large and branching, and were lined by a single layer of cells; others, apparently, were in various stages of the process of formation, all forms, varying from almost solid masses of cells, with intra-cellular vacuoles containing colloid, to the completely-formed large follicles, being frequently met with.

C. Thymus.

The total amount of thymic tissue was small; in what there was the veins and capillaries were engorged, otherwise there were no abnormalities either in cell structure or arrangement.

D. Suprarenals.

The suprarenals appeared to be in every respect normal. The capsule, the zona glomerulosa, the zona fasciculata, and the zona reticularis were almost diagrammatically evident.

E. The Ovaries.

The left ovary was reduced to a fibrous cord.

The right ovary was also extremely fibrous. Some of the sections showed only fibrous tissue. At the centres of others were degenerated Graafian follicles. The general appearance would have been normal in an extremely aged woman; for a woman of 50 they can only be described as indicative of an extraordinarily premature senility. At no place in the numerous sections examined was any sign of a corpus luteum discovered, nor was any indication of surface scarring observed. The germinal epithelium had entirely disappeared from the surface.

F. The Spleen.

Apart from a slight increase in the fibrous trabeculæ, the spleen appeared normal. There were no marked signs of chronic venous congestion.

G. The Intercarotid Gland.

The intercarotid gland was examined; no abnormality of structure was observed.

H. Zukerkandls Chromatin Bodies.

The lymphatic glands lying near the origin of the inferior mesenteric artery were examined microscopically. No chromatin cells were discovered.

I. The Coccygeal Gland.

Serial sections were made of the tissues lying around the branches of the middle sacral artery, and the coccygeal gland in this way sectioned. No abnormality of structure or of cell type was observed.

K. The Marrow.

Marrow was removed from the shafts of both femora. It was of a red colour. On microscopic examination this was found to be chiefly due to the great amount of blood present, and partly to the abnormal persistence of actively functioning marrow elements which were present in considerable quantities round the fat cells.

The detailed appearances of the marrow elements were in no way unusual.

L. The Parathyroids.

The amount of parathyroid tissue was largely increased; its vascularity was enormous, at parts a vesicular structure had been developed. At one place in the parathyroid, from the back of the left lobe, there was a mass of granular débris which stained freely with eosin.

II. THE ALIMENTARY SYSTEM.

A. The Salivary Glands.

The salivary glands showed the ordinary structure and appearance of these glands in the subjects of venous congestion.

B. The Liver.

The liver was very fatty, the result, apparently, of both fatty degeneration and fatty infiltration. The condition was, however, so advanced that it is difficult to speak with certainty. Most of the cells were distended with fat, but at the centre of the lobules there were numerous rather atrophied cells which contained fat droplets and granules. The centres of many of the lobules were completely disorganised as the result of chronic venous congestion.

At the left margin of the left lobe of the liver the gland cells had almost completely disappeared, and been replaced by dense fibrous tissue. In some of the remaining lobules the venous congestion was most intense.

C. The Pancreas.

The examination of the pancreas was not satisfactory; so far as could be made out the structure and appearance were normal.

D. The Small Intestine.

The small intestine was normal in structure and appearance throughout its length. Portions of intestine taken every two feet from the pylorus to the ileo-cæcal valve were examined.

III. THE GENITO-URINARY SYSTEM—KIDNEYS.

A. Right Kidney.

The right kidney showed the changes ordinarily associated with chronic venous congestion, but not to a very great degree.

The glomeruli were large; the venules and capillaries were engorged and dilated.

The epithelium of the secreting tubules was, as a whole, little altered; at some places there were catarrhal changes; a few granular casts were noted in the collecting tubules.

B. Left Kidney.

The left kidney was fatty; the essential elements of the organ showed the changes ordinarily associated with subacute nephritis. The interstitial connective tissue was increased in amount, and fibro-cellular; many of the tubules contained granular débris and degenerated cells. The Malpighian bodies were enlarged; in some there was interstitial thickening of the tuft and leucocytic infiltration. Some of Bowman's capsules were thickened and showed concentric laminæ of connective tissue, with flattened cells between; others were almost normal in appearance.

The signs of venous congestion, dilatation of the veins and venules, were also present; several small infarcts were noted.

C. The ovary has been described under the heading "The Ductless Glands."

IV. THE NERVOUS SYSTEM.

A. The Spinal Cord.

The microscopic examination of the spinal cord was most unsatisfactory.

The method of preparation and fixation (intravascular injection of 30 per cent. formalin) was little suited to preserve fully the staining properties of the tissues.

The following notes are all that can be offered. The cord in the dorsal and lumbar regions was markedly asymmetrical, the right side being the more bulky.

There was throughout a fairly definite increase in the amount of the supporting structures.

No degeneration of the essential elements was discovered, although carefully looked for.

B. The Sympathetic Ganglia.

The increase in the bulk of the semilunar ganglia was due to an increase in the amount of the fibrous tissue. There were no visible changes in the essential elements.

C. The Peripheral Nerves.

The increased diameter of the peripheral nerves was due to a great increase in the amount of the fibrous tissue. There were no visible changes in the essential elements.

V. THE MUSCULAR SYSTEM.

The muscles examined were normal in appearance.

VI. THE OSSEOUS SYSTEM.

The bone of the cranial vault (occipital squame) was remarkable for its extreme vascularity and for the thinness of the bony trabeculæ. There was neither true outer table nor true inner table, the whole thickness being diploic.

The bone of the femur was remarkable for the enormous dilatation of its vascular spaces and for the thinness of the surface layer of compact bone.

VII. MISCELLANEOUS.

The subcutaneous tissues were markedly increased in thickness, but were normal in appearance.

The mammary gland was completely atrophied.

The lymph glands were the seats of a simple hyperplasia.

The walls of the arteries were thickened.

Summary of Microscopic Report.

The pituitary was the seat of a simple hyperplasia (?). The thyroid was enlarged and apparently hyperfunctionating; the parathyroids were extremely active, and resembled in appearance those found in cases of thyroid insufficiency; the ovaries were functionless. The left kidney was degenerating, and the seat of a subacute nephritis; the liver was fatty and degenerated. The bones were abnormally vascular.

The other tissues of the body showed in greater or less degree the ordinary signs of chronic venous congestion.

(The major portion of the expense of this examination was defrayed by a grant from the Moray Fund.)

ON STONE-MASONS' PHTHISIS.[1]

By G. LOVELL GULLAND, M.A., B.Sc., M.D., F.R.C.P.,
Physician to the Royal Victoria Hospital for Consumption; Physician to Chalmers's Hospital; Assistant-Physician to the Royal Infirmary, Edinburgh.

In January 1907 I was asked to give evidence before a Home Office Committee on the subject of stone-masons' phthisis, with the view of ascertaining whether it was a disease which should be included under those scheduled in the Workmen's Compensation Act. I approached the subject from this point of view, with an absolutely open mind, and it became obvious to me as I looked into the matter that the whole question turned upon whether the condition was primarily due to grit, and whether it remained in most cases a fibroid phthisis due to the particles, or whether tubercle played a large part in its causation and continuance. I found the opinions of authorities most conflicting, and, as was to be expected, while the older authors regarded the condition as mainly or entirely due to grit, the more recent ones admitted the probability of a much larger part being played by tubercle. I need hardly remind you that Edinburgh has always been regarded as one of the parts of the country where this disease is most prevalent, the reason probably being that the freestone used in building here makes a fine dust, which remains suspended in the air for a long time, and is, of course, inhaled by the men working it. Stone-cutting in this district takes place almost entirely in long sheds open at one side, and when cutting is going on by a number of workers the dust in these places is very considerable; and as far as I have been able to observe, steps are seldom taken to remove the dust from the sheds, so that it is stirred up by the feet of the men as well as by the cutting.

In investigating the subject afresh, I took, first of all, a large number of cases of in-patients in the Royal Victoria Hospital, but found that they would hardly help me in determining the question, as they all had tubercle bacilli in their sputum, and were all fairly advanced cases. The only point that emerged from the study of that set of cases was that they had had a fairly long onset before admission, and that they were not influenced by treatment to the same extent as other cases of non-grit phthisis of the same severity and duration. This, of course, is very much what one would expect. The addition of another element to the tubercle is not likely to help the patient's power of resistance.

[1] Read before the Edinburgh Medico-Chirurgical Society.

I then turned to the out-patient records, and here I had a great mass of material to my hand, for in the three years preceding my first set of observations the sputum had been examined as a routine in every case which would or could furnish it. Before that time it had only been done in cases in which the diagnosis was doubtful, or where, for some reason, it was desired to make the observation.

Since the time when the original evidence was drawn up I have added to the cases which I then considered, those appearing at the dispensary, and those in the Royal Victoria Hospital up to date. In all, 87 out-patients come to be considered, being the total number of all masons who have appeared for diagnosis or treatment at the out-patient department during the last four years; while the number of in-patients is 36, giving a total of 123 cases. Of these, for my purpose, that is to say, the question of how far tubercle played a part in the production of this disease, the out-patients are the more important, for no case is taken into the hospital unless tubercle bacilli are present in the sputum, or unless there is definite evidence from some other source that the cases are tubercular; though, of course, occasional errors in diagnosis on the part of those sending in cases will occur. Among the out-patients, whom I wish to take up first, a distinction is always made between builders and hewers, builders being the men who lay the stones, hewers those who cut them. The conditions of work of the two classes are, of course, widely different. The builders work in free air, are not exposed to dust to anything like the same extent that the hewers are, and do not have to work in a cramped posture. Of the 87 cases, 76 were hewers, 11 were builders, which is sufficiently striking in itself as illustrating the difference in incidence of respiratory diseases between the two classes, as the number of hewers is certainly out of all proportion greater than the proportion of men employed in that branch of the trade. Of these 87 cases, 2 only did not show signs of lung mischief; one, a hewer, had aortic stenosis; the other, a builder, had an ordinary laryngitis. These 2 cases may, therefore, be excluded, leaving the total number to be dealt with at 85, all of whom had physical signs more or less marked.

The age incidence is as follows :—

Up to 20	1
20 to 30	11
30 to 40	21
40 to 50	33
50 to 60	15
60 to 70	4

Men of 30, for example, are placed in the 30 to 40 period.

It will be noted that the 40 to 50 period yields by far the greatest number, which is not the rule in ordinary cases of phthisis. If one takes for comparison the table of ages furnished in the Report for all patients applying, the largest number by far is from 20 to 30, and next to that from 10 to 20, so that stone-masons appear 10 years later than people engaged in mixed trades. In the indoor cases the results are rather different—

Up to 20	1
20 to 30	11
30 to 40	13
40 to 50	7
50 to 60	3
60 to 70	1

This probably results from the fact that the tendency in the hospital is always to take in younger people as being more likely to improve, and further, that the men coming up at later ages have already physical signs so marked as to make improvement unlikely. The totals of the two classes together are:—

Up to 20	2
20 to 30	22
30 to 40	34
40 to 50	40
50 to 60	18
60 to 70	5

It is rather curious that the family histories of both classes of cases are so good from the point of view of tubercle. In the out-patient cases only 13 gave a family history of phthisis; that is to say, 1 or more members of the family—father, mother, sister, brother, or wife—had been affected with phthisis; while among the in-patients 8 gave a similar history, 21 in all out of 121. Of course such histories are not of much value. The persons of the class from which the Victoria patients are mostly drawn know very little of their own histories, much less of those of the family, and their ideas of the nature of illness are necessarily extremely vague.

The amount of mischief in the chests of these various cases, as might be expected, varies very widely, but may be classed roughly as early, medium and advanced; the early cases being taken as those with comparatively slight apical mischief, usually more marked at one side than the other: medium cases as those with definite double apical mischief, equal or slightly more marked on

one side than the other; and advanced cases those with definite cavitation at the apices, or invasion of other lobes in the lungs. Classifying them in this way, among the out-patients there were:—

Early	22
Medium	29
Advanced	29
Bronchitis	2
Pleural effusion	1
Chronic fibroid disease with marked emphysema	2

Among the in-patients there were:—

Early	7
Medium	3
Advanced	26

The much higher proportion of advanced cases among the in-patients is striking, but it is probably due to the fact that the resident physicians of the hospital have the cases under observation for a long time, and are able to detect lesions which might not be obvious on first examination. I may state here at once that I have never succeeded in satisfying myself that there is any fundamental distinction in physical signs between stone-masons' phthisis and ordinary tubercular phthisis. Nearly half of the out-patient cases, as it happened, were examined by myself, and the others bear out this view. There is no special tendency, as far as I can see, to the development of emphysema, of marked dulness suggesting dense fibrous tissue, or to any difference in physical signs given by the cavities between these cases and ordinary ones. The whole series of cases, as far as physical signs go, could easily be paralleled by a similar number taken almost at random from persons engaged in other trades. Nor is very much light thrown upon the subject by their histories. Most of the cases, when they came up to the dispensary, had been off work for some time, but the time off work varied from one day to several years, in a manner quite arbitrary, and bearing no relation to their physical signs or symptoms, and was very often, of course, due not to the disease at all but to outside labour conditions. The time during which these patients considered themselves to have been ill also varied in the most extraordinary fashion. For example, an advanced bilateral case, with all lobes involved, would tell you that he had been ill for 6 months and off work for 4; while, on the other hand, an early apical case, whose prospects were so favour-

able that he was sent into the hospital, had been ill for four years, and off work for ten weeks.

My experience with regard to working men in Edinburgh is that they used to tend to go on working to the last possible moment before seeking advice; but in the last year or two, I am glad to say, the proportion of early cases coming up to the dispensary has been very much greater, and we seldom now see cases with advanced cavitation appearing for the first time.

We may now consider the question of the number of stone-masons whose sputum contained tubercle bacilli. My reason for selecting cases coming up to the out-patient department in the last four years is, that that period coincides with the system of voluntary notification, and later of compulsory notification, of phthisis in Edinburgh. Before that time the sputum was examined only in cases where the diagnosis was doubtful, or where for other reasons it was important to determine the presence or absence of bacilli. Since that date, however, the sputum of all cases which could and would furnish it has been examined as a matter of routine, provided that the cases came from Edinburgh, and provided that they were not already in the hands of practitioners. Since compulsory notification has been instituted by the city, this has been more regularly carried out than during the period of voluntary notification, so that the records in this respect for the last two years are much fuller than the earlier ones. In the 85 cases in question, the sputum has been examined in 54, or 63·5 per cent. In 31 it was not examined. In the 54 cases examined, tubercle bacilli in varying numbers were found in 48, or 88·8 per cent. Of the remaining 6 cases, 3 were only seen once; 2 of these were very early cases, in which tubercle bacilli might quite well not have been present in the sputum at the time; and the third was an advanced case with cavities, but with a good deal of bronchitis in addition. This factor of bronchitis was present also apparently in the 3 other cases which were seen more frequently, but which were all more advanced. It is quite possible that the amount of bronchitic sputum may have diluted the purely tubercular sputum so as to render discovery difficult, as it very often is in such conditions. It will be seen at once that the percentage in which tubercle bacilli were found at a first examination is very high—quite as high, if not higher, than if a similar number of ordinary phthisis cases were taken at random. Of the remaining 31 cases, 8 came from the country, 17 were only seen once (a good number of these were sent up simply for an opinion), and the

others are derived almost entirely from the earlier part of the period, when examination was not so regularly carried out. A fair number of the 31 cases had temperature, and, presumably at least, as many of them had tubercle in the sputum as in the other set. It is not found possible, as a general rule, to make more than one examination of sputum at the dispensary in each case. The number of patients is too great to allow of repeated examinations. Were it possible to carry these out, it is probable that many more positive results would have been obtained.

Among the 36 in-patients, the number having tubercle bacilli in the sputum is even higher, as one might expect. The bacilli were present in the sputum of 31 cases; 1 case had no sputum at all; 1 was a case of fibrinous bronchitis; 1 left a few days after admission, before the sputum had been examined; in 1 case, for some reason, there is no record; and in the remaining case, though he was in for 10 months, tubercle bacilli seem not to have been found at all. The two last cases were in the earlier days of the hospital, when things were not so fully systematised as at present.

In considering the whole question of the relation of tubercle to stone-masons' phthisis, it must be remembered, in the first place, that a certain number of these men would have contracted phthisis in any case in all probability. The "all males" death-rate from tubercle is 267 per 100,000, according to Dr. J. C. Dunlop's calculations, while the death-rate of this trade group is 586, or more than double. One may, therefore, assume that a considerable proportion of the cases I quote were primarily tubercular, and had no necessary relation to occupation, and probably one would not be far wrong in assuming that many of the cases occurring in younger men who had not been long at their trade would fall under this category. I have already pointed out that the age incidence is late among stone-masons, and a very large number of these later cases must certainly have owed their lung mischief largely to their occupation. In all probability the course of events is that the stone dust irritates the bronchi and bronchioles, and that the tubercle bacilli easily find a lodgment under these conditions. It seems to be a rule with regard to this disease that the finer the dust thrown off in stone-cutting, the more prevalent is phthisis likely to be among the workers. The granite cutters of Aberdeen, for instance, are said not be so numerously affected as men who work in freestone, from which the particles thrown off are fine and sharp. The real point of difficulty is to know

exactly at what stage of the process the tubercle bacillus starts its inroads. I think one may take it for granted, from the statistics which I have given, that practically all these cases are tubercular. My impression is that the bacillus comes into play very early in the condition, and that the disease generally assumes the chronic type which it has because the irritation of the stone dust causes the formation of fibrous tissue and limits the invasion of the bacillus to a certain extent. Thus the stone dust may be regarded as being at the same time the primary irritant and a secondary safeguard. On the whole, the cases certainly are chronic in duration. Speaking roughly, the men have suffered from symptoms longer than the ordinary run of cases which come up to the dispensary. They live longer also, but, as might be expected, they do not improve under treatment to anything like the same extent. Among the in-patients, their stay in hospital is long, except in cases which were discharged early as unsuitable, and the following table of the results of treatment is distinctly worse than the results of any similar set of cases of the same ages and having the same duration of treatment. It refers only to the physical signs in the chest. Almost all the cases improved to a greater or less extent in general condition.

No change . . .	13
Slight improvement . .	6
Improvement . . .	11
Great improvement . .	3
Worse. . . .	3
	36

It is difficult to see what measures can be taken to prevent this high incidence of tubercle among stone-masons, and the high mortality which follows it. The Committee before which I gave evidence took practically the same view as that which I had urged, namely, that it was impossible to make this disease a subject for legal compensation, because of its duration, the possibility of the men having acquired phthisis from other sources, and because of the impossibility of deciding from the physical signs whether any given case had more of the tubercle or of the grit element in it. It would be obviously unfair to penalise any employer for disease occurring in one of his workmen, who had possibly acquired it years before in the employment of some other master, and, in all probability, the presence of lung mischief of any

kind would prevent a man from getting work with new masters. Large employers of labour, at any rate, would be pretty sure to subject applicants to medical examination if the disease were made a subject for compensation.

It is notoriously difficult to change conditions under which men work. As I have already said, and as is well known to all of you, stone-cutting in Edinburgh is carried on in long open sheds, in which the dust is allowed to lie thick. As these sheds are temporary buildings, it is doubtful whether any means of drawing off the dust by fans or otherwise would be practicable. The only feasible method seems to be that the men should wear respirators while at work, of sufficiently fine mesh to exclude the dust. This has been tried in some places with encouraging results, but, in order that the precaution may be generally taken, the impetus to it must come from the men themselves. At present, their apathy towards the question is extraordinary; but we must hope that as the population becomes more fully educated in regard to tubercle, they will see the necessity of preserving their health in some such way. If there were a well organised trade society among them the initiative might come from that, but in Edinburgh, at least, men seem to belong to various friendly societies, and not to be grouped together in the way that obtains among some other trades.

I desire to thank my colleague, Dr. R. W. Philip, for his kindness in allowing me to make use of his cases for this inquiry; Dr. Leslie Lyall, our clinical assistant at the out-patient department, for the examination of the sputa; and Dr. Middleton Hewat, our resident physician, for collecting and tabulating the records of the in-patients.

CONSERVATIVE SURGERY OF THE UTERUS AND OVARIES: ITS POSSIBILITIES FROM THE EXPERIMENTAL STANDPOINT.[1]

By E. SCOTT CARMICHAEL, M.B., F.R.C.S.E.,
Surgeon, Diseases of Women, Royal Public Dispensary; Assistant-Surgeon, Royal Hospital for Sick Children, Edinburgh.

ADVANCES in surgery tend more and more towards conservatism. There is no branch of surgery in which this is more strikingly shown than in the operative treatment of the uterus, tubes and ovaries.

[1] A paper read before the Edinburgh Obstetrical Society, January 1909.

Ten or fifteen years ago a surgeon was considered conservative if he removed a diseased tube and ovary and left the sound organs on the opposite side. Cystic and sclerotic ovaries were removed for dysmenorrhœa, and the presence of somewhat large and unruptured Graafian follicles frequently sealed the fate of some unfortunate ovary. A pyosalpinx on one side was sufficient indication for the removal of both Fallopian tubes.

In the face of work such as that of Fraenkel, Cohn, Marshall, Jolly and others, the responsibility of the surgeon is a great one when he removes an ovary entire, and this applies in not much less degree to the surgical treatment of the uterus and Fallopian tube.

It is unnecessary to refer at great length to the literature of the subject, for it is more the purpose of this paper to record some personal observations from the physiological and experimental standpoint and the bearing they have on clinical and operative work. In many of these observations I have had the advantage of being associated with Dr. Marshall, who has appreciated to the full the bearing of them on clinical operative work.

The small cystic ovary, the cirrhotic ovary and the ovary embedded in peritoneal adhesions have, in the light of recent pathological work, been credited with having the power of exerting some of their physiological influence, and are no longer condemned to extirpation.

Although the ovary has now been fairly established as an organ of internal secretion there is still much controversy as to its importance, and such a substance as "uterin" is stated to maintain the uterus in functional activity without the presence of ovarian tissue. Ovarian activity is supposed to depend on the presence of the uterus.

To satisfy ourselves on this point, the ovaries were removed in five adult rabbits, which were killed at intervals of $3\frac{1}{2}$ to $5\frac{1}{2}$ months later. In all cases a microscopic examination showed marked atrophy (even at this short period) of the whole uterus, but more especially of the muscular wall, the muscle fibres in many cases being converted into fibrous tissue. Removal of the ovaries in two very young animals arrested the development of the uterus entirely, the organ retaining its infantile shape when the animal had otherwise attained complete development.

These experiments failed to support the contentions of Blair Bell, who asserts that the theory of internal secretions of the ovaries is inconclusive, and that clinical facts go to show that

menstruation is due to a uterine secretion, and the menopause due to its absence, while he supposes ovulation to depend on the circulation of this secretion.

On the other hand, the clinical observations by Zweifel and Abel would seem to support the view of the presence of a uterine secretion influencing the ovaries. They believe that if some of the uterine mucous membrane be preserved in performing hysterectomy the menopause which would otherwise supervene is prevented.

Bond in his experiments expresses the belief that hysterectomy leads to the formation of luteal tissue in the ovary. There is, further, much clinical evidence (Mandl and Bürger) to show that hysterectomy has a distinct detrimental action upon the ovaries, and that there is a gradual cessation of ovarian function due to atrophy and degeneration.

Our experiments show that removal of the ovaries in early life leads to inhibition of the uterine growth, and that the uterus in itself has not the power of maintaining its integrity without the ovarian influence.

It is difficult to explain, in face of such experimental evidence, the clinical evidence of such surgeons as Pozzi and Doran, and one cannot believe that the presence of small fibroids, or endometrium, can maintain a true menstruation in the absence of the ovaries.

Zweifel and Abel, at a recent meeting of the German Gynæcological Congress, declared that when the body of the uterus is removed entire atrophy of the organs always follows, but that menopausal symptoms can be prevented by conserving a small portion of the uterine mucous membrane. Mandl and Bürger, in their exhaustive monograph, hold that when the ovaries are left behind after hysterectomy there is gradual cessation of ovarian influence. Bond believes, on the other hand, that ovarian secretion is influenced by a uterine saline secretion—the one controlling the other—so that prevention of the uterine secretion by hysterectomy favours hypertrophy of the ovary.

To test the validity of these statements we removed the uterus entire in four very young rabbits. These were allowed to grow to adult life, when they were killed. The ovaries corresponded in size and appearance to those of a normal adult rabbit, containing large follicles, some of which were recently ruptured, showing evidence of ovarian activity. In three experiments part of the uterine mucosa was left behind, and in these also the ovaries developed normally. These experiments would seem to show that

the growth and development of the ovaries are in no way dependent on the presence of the uterus, and contradicts the evidence of Zweifel, Abel, and Mandl and Bürger. Nor was there any evidence of ovarian hypertrophy, as suggested by Bond.

While there is definite experimental evidence to show that the ovaries have an important influence on the uterus, the presence of the uterus, on the other hand, does not in any way influence ovulation or the secretion of the ovary, which seem to be important facts to be considered in dealing with the uterus and ovaries surgically.

The uterus may therefore be considered as an organ exerting no general influence on the economy, and its removal along with the ovaries for disease of the latter must be looked upon as a very different matter to the removal of the ovaries with a diseased uterus. Thus conservative operation on the uterus, analogous to the conserving of ovarian tissue, is unnecessary from any point of view, except for its safety to the patient.

It is difficult to understand how Doran has come to the conclusion that a high amputation of the uterus is to be recommended to insure the continued functions of the ovaries, or, in other words, that the presence of endometrium is essential to the health of the ovary. Certain it is that subtotal hysterectomy so called need not be considered as an operation of choice from this point of view.

We may now turn to the question of conservative surgery of the ovaries. Suppose the ovary to be diseased in a young subject, what can be done to conserve ovarian tissue, and what does physiological and experimental evidence teach us as to means of preserving its function?

Extirpation of the ovary for adhesions, Graafian cysts, corpus luteum cysts, and even in some cases of papilloma, must be looked upon as an old operation, and not in keeping with the most recent surgical advances. It is still a matter of some difficulty for surgeons to remove a Fallopian tube without its corresponding ovary, but it must be considered so only from technical reasons and from adherence to a traditional style of operating.

The conservative principles applied to the treatment of the ovary involve the puncture of small cysts, the excision of small cysts, the resection of part of the ovary, and transplantation in whole or in part of an ovary, and it is the purpose of this paper to consider the latter two methods in their relation to the effects on the ultimate condition of the ovary.

Ovarian resection has been practised by many gynæcologists, but notably by Martin and Kelly and Bland Sutton. Of the

ultimate fate of the portion left behind surgery tells us little for obvious reasons. We have therefore to turn to experimental physiology to ascertain the changes present in part of an ovary left behind. A series of experiments were performed in which a single ovary was removed in rabbits. This was weighed and preserved and compared with the opposite ovary removed some months afterwards. The details of these experiments have been previously recorded (*Journal of Physiology*, 24th February 1908). The remaining ovary, removed some months afterwards, was found, in healthy animals, to have undergone marked compensatory hypertrophy, in one case being exactly twice the size, as measured by weight.

In one animal, during the interval, three litters of young ones were born, in each instance the number being seven, showing that ovulation in the single ovary was exceptionally active, as a litter of twelve to fourteen from two ovaries is not a usual occurrence in a rabbit.

Bond has also shown that compensatory hypertrophy occurs, but his assertion that it is dependent upon pregnancy is not borne out by our experiments, as the growth was well marked in animals in which no pregnancy occurred during the interval.

The power of compensation was demonstrated more strikingly in four animals in which one ovary and a piece of the other was removed, and it is interesting from the point of view of surgical resection of the ovary. In one animal, in which, as far as could be judged, only one-fifth of an ovary was left behind, the weight of this part six months later was 0·37 grms., or larger than the average weight of a whole ovary in an adult rabbit. This animal became pregnant, and five young ones were born. It is a striking example of the physiological and anatomical compensation that can take place.

This compensating power does not depend upon the presence of the uterus, as was shown by the following experiment, in which the right ovary and uterus were removed from an adult rabbit, the ovary weighing 0·34 grms. Nine months later the left ovary was removed, and weighed as much as 0·75 grms. The compensatory hypertrophy in these cases was not mere normal growth, as the rabbits employed were adult ones, and had in most cases borne young.

These results certainly encourage us to conserve even the smallest portion of ovarian tissue in the human subject.

There is still another method of preserving the ovarian

function which must be referred to, viz. ovarian grafting, the literature of which increases rapidly. Ovarian grafting in most instances is stated to have been successful, but histological descriptions of the transplanted ovaries are usually either very inadequate or altogether omitted. Some of the most satisfactory and reliable results obtained were those of Marshall and Jolly. Their work has been entirely done in rats, and the results obtained by them show conclusively that the whole ovary in these animals can be transplanted with success, and that it has the power of preventing uterine atrophy. One would wish, however, that their observations had been extended over a longer period than six months, as it is a matter of doubt whether these grafts persist for any length of time, and those cases reported as successful in the human subject by Morris, Martin and others have not been verified by subsequent operation or post-mortem examination.

At a meeting of the Pathological Club two years ago I recorded the results of twenty-one transplantations in rabbits. The work was done to satisfy myself as to the possibilities in the human subject. The experiments were conducted on rabbits—a much larger animal than those used by Marshall and Jolly, whose work appeared about the same time independently.

In these experiments complete success was only attained in one case, and in this the whole ovary was in a normal state of preservation three months after it was grafted, while in fifteen of the experiments there was partial success, ovarian tissue still persisting after some months, with healthy Graafian follicles present in ten cases.

From these experiments one cannot but think that the grafting of the whole ovary, large as it is in the human subject, can rarely be attended with success with such a mass of tissue, although there is little doubt that partial grafting can, with careful technique, be always attended with success.

Homoplastic grafting, therefore, in inflammatory disease of the tubes and ovaries in young subjects seems to be indicated as the result of experimental evidence. We have yet much to learn as to its ultimate value in the human subject.

Conservative treatment in the surgery of the Fallopian tube is as yet in its infancy. An ectopic gestation is still an indication for removal of the whole Fallopian tube, but the future of conservatism in this organ lies in—

1. The release of adherent tubes.
2. The opening and resection of closed tubes.

3. The drainage of tubal abscess.

4. Preservation of tubes in cases of ectopic gestation.

This paper has been largely written from experimental work already published,[1] and much detail has therefore been omitted which is incorporated in the original papers.

Experimental work done on animals has led me to the conclusion that much more is yet to be done in this branch of surgery.

The reasons for conservatism, as stated by Kelly, are—

1. That it is the general attitude of all true surgery.

2. That the structures involved are of great importance to the human organism.

3. That we now recognise that what were once considered diseases of the tubes and ovaries are no diseases at all.

4. That recognition of a diseased part may demand only the removal of that part alone without sacrificing the whole organ.

5. That badly diseased uterine tubes may again become normal in their functions.

CLINICAL RECORDS.

SCHLATTER'S DISEASE.

By J. EDWARD BOWSER, M.B., Penrith.

It is well known that the tubercle of the tibia, to which the ligamentum patellæ is attached, is developed from the same centre of ossification as the superior epiphysis, of which it constitutes, during adolescence, a somewhat tongue-shaped prolongation extending downwards for some distance in front of the upper end of the diaphysis.

The centre of ossification for the superior epiphysis usually appears before, but sometimes after birth, but the downward prolongation does not begin to ossify until about the twelfth year. Occasionally this prolongation is developed from a separate centre of ossification (Quain). The superior epiphysis becomes united to the diaphysis in the twenty-first or twenty-second year.

It will thus be seen that, during a period of life when violent and ill-regulated exercise is liable to be indulged in, the powerful quadriceps muscle is, through the ligamentum patellæ, inserted into

[1] *Proceedings, Royal Society, London*, B., vol. lxxix., 1907; *Journal of Physiology*, February 1908.

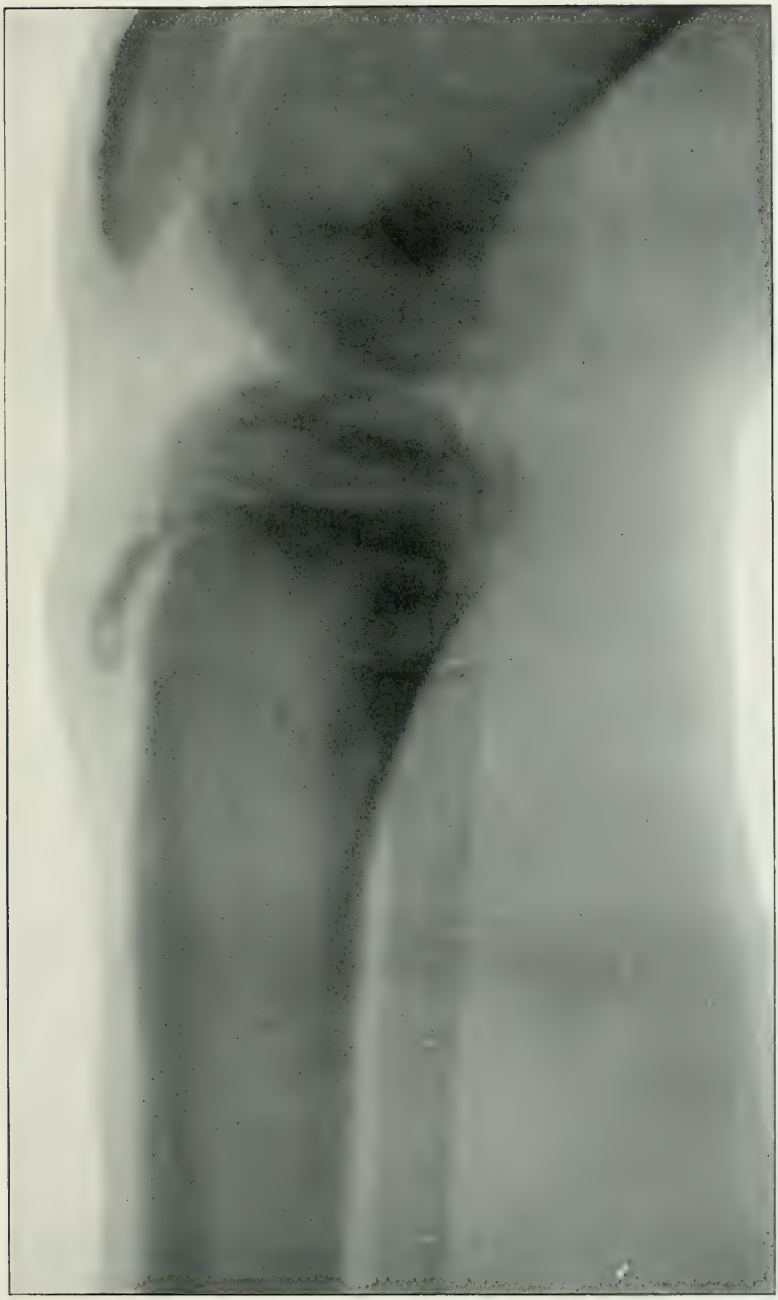

Fig. 1.—Schlatter's Disease.

Fig. 2.—Schlatter's Disease.

this slender process of bone, which, though continuous at its base with the superior epiphysis of the tibia, is free at its apex, except for its relation to the periosteum and conjugal cartilage.

This anatomical condition is apparently the predisposing cause of a troublesome lesion which occurs chiefly in active boys about thirteen years of age.

The name of Schlatter's Disease has been given to this lesion since it was described by that surgeon in 1903, though Müller had published an account of it in 1887.

Osgood and other American writers have also published cases, and an excellent paper by Haglund, of Stockholm, appeared in the *Lancet* of 4th July 1908.

Other names that have been applied to the lesion are:— Avulsion of the Tubercle of the Tibia (Stimson), and *Apophysitis Tibialis Adolescentium* (Alsberg).

A case of Schlatter's Disease came under my care in March last. The patient was a boy of 13 years and 5 months of age, of active, not to say unruly, habits, and of whose surgical misadventures this was by no means the first.

My patient complained of pain in the region of the tibial tubercle, and of lameness which was obvious when he tried to walk.

The skin over the tubercle was reddened, and there was evident enlargement of the bone, which was tender to the touch. The symptoms suggested an inflammatory condition beneath the periosteum. The possibility of tuberculosis was considered, more especially as a near relative had died after repeated operations for tuberculosis of the shoulder.

On 17th March 1908 my partner, Dr. Livingstone, kindly took the accompanying skiagraph (Fig. 1), from which it was seen that there was no evidence of tuberculosis. On the other hand, the skiagraph showed a solution of continuity in the bony downward prolongation of the epiphysis, and, in addition, an apparent widening of the cartilaginous interspace between this process and the shaft. It should be said that the appearance of fracture is even more marked in the negative than in the plate.

The boy was kept to the house and garden, and not allowed to run about for four weeks, during which time Bier's hyperæmic treatment was applied for two hours daily by means of an elastic bandage round the thigh. At the end of that time the symptoms of lameness, pain, and tenderness had disappeared, though some degree of enlargement remained. The patient voluntarily continued Bier's treatment for a few weeks longer.

Dr. Livingstone took another skiagraph (Fig. 2) on 23rd January of this year, from which it will be seen that ossification at the seat of fracture is complete.

Bier's method of treatment appeared to be of much service, and recovery took place in a shorter time than usual. Haglund gives six months as the usual duration, but says that two years may elapse before the patient gets a useful limb again.

It seems probable that, though the initial lesion may be a fracture or displacement of the tongue-like process of the epiphysis, yet the clinical symptoms, which are clearly inflammatory, may be due to the irritation of the growing osseous tissue caused by the contractions of the quadratus femoris, in consequence of the fragment of bone into which the tendon is inserted having become loosened from its attachments.

A MARKED EXAMPLE OF SCHLATTER'S DISEASE.

By ALEXIS THOMSON, F.R.C.S.,
Assistant-Surgeon, Royal Infirmary.

I WAS recently asked to see a schoolboy, aged 15, and was told that for three or four years he had been conscious of an undue sensitiveness at the upper end of the shin bone of either leg. He informed me that he does not feel it in walking or when he forcibly extends the joint as in kicking, but it hurts unduly when anything comes against it and on kneeling, and he is uncomfortable when he is obliged to sit for any length of time with the knees flexed. He had seen several doctors both north and south of the Border, and had been told by some that it was rheumatism, by others that it was housemaid's knee, while, again, others expressed a fear of tuberculous disease. He had had a course of massage, of painting with iodine, and of electric treatment, and two years before the knees had been radiographed. No method of treatment appeared to have influenced the condition, and, as his parents were concerned at his inability to take part in games such as football, and as there persisted a very decided swelling at the top of each shin bone, they were anxious to have the matter cleared up.

I found him to be a fairly well-grown boy for his age, the bones of the limbs being well formed. The knee joint is perfectly sound. A little above the tubercle of the tibia on either side there is a rounded projection which is very noticeable when the

Radiogram of left knee of boy, æt. 15, suffering from Schlatter's disease.

Radiogram of right knee of boy, æt. 15, suffering from Schlatter's disease.

limbs are looked at in profile. The projection is most marked when the knee is flexed and the parts over it, including the skin, are put upon the stretch. While the projection on the left side is slightly the more prominent, that on the right is the more sensitive, and even the pressure of the fingers in examination causes discomfort.

Dr. Hope Fowler took photographs of the knee with the limb resting on its outer side, and these are reproduced in the Plates. Both radiograms show considerable irregularity of the downward tongue-like prolongation of the upper epiphysis of the tibia. Ossification is nearly complete, but it has taken place irregularly, and there is a want of continuity between the tongue-like prolongation and the epiphysis itself, the gap being probably occupied by cartilage. The appearances are almost identical on the two sides. There is no trace of rickets in the other epiphysial junctions in the region of the knee.

The case is peculiar in that the condition appears to have existed for three or four years and is still in evidence. In other respects it corresponds very closely with the description given by Schlatter and others. So far as the patient and his parents are concerned, it was important for them to know that complete recovery was to be confidently expected, and that no special treatment was called for; it seemed advisable, however, to prohibit violent forms of exercise, such as football and rackets, also shooting drill which entails kneeling on the ground.

With regard to the want of continuity between the tongue-like process of the tubercle and the upper epiphysis of the tibia so often observed in radiograms of Schlatter's Disease, it is to be remembered that the tubercle has sometimes an entirely separate centre of ossification, and forms a distinct epiphysis, so that the want of continuity referred to must not be accepted as evidence of a fracture of the tongue-like process. This fracture is a totally different lesion and is well described in Poland's *Traumatic Separation of the Epiphyses.* I am inclined to believe that the affection called after Schlatter is predisposed to and is much more liable to occur in youths in whom the tongue-like process of the tubercle has a separate centre of ossification.

I am indebted to Dr. W. H. Barrett, of Southport, for the information that the affection was formerly well known under the name of "Rugby-knee," that it was recognised as a bar to taking part in military drill because of the incapacity to kneel on the affected limb, and that the rounded projection at the upper end

of the tibia which characterises the affection may persist throughout life.

On searching through the writings of Sir James Paget, I find in his Essay on "Periostitis following Sprains"[1] a description of the features of Schlatter's affection, which is so well-worded that I venture to reproduce it here:—

"Much more common are the enlargements of the tubercle of the tibia which are often seen in young people much given to athletic games. They complain of aching pain at and about the part, especially during and after active exercise, and the tubercle may be felt enlarged, and is often too warm. The pain often continues, more or less, for many months, and there may be enlargement of the bursa under the ligamentum patellæ, and the tubercle may remain too prominent; but, common as are these cases, especially in our public schools, I have never known grave mischief ensue in any of them, and they get well of themselves. They may represent one of the least degrees of periostitis due to strain; the increase of the prominence of the bone is only just beyond that which may be deemed the normal limit for the attachment of vigorous muscles."

A REMARKABLE CASE OF PHIMOSIS.

By ANDREW M'KAIG, Kalimpong, Bengal.

Is, a boy of 14, son of a wealthy Hindu banker, was brought to me on 12th October 1908 to see if I could do anything to relieve his condition, as arrangements for his marriage had just been completed. The history appeared to be that about four years ago the boy had had an inflammation of the prepuce, with much swelling and discharge; when this subsided the orifice was found to be closed and the prepuce much elongated.

On examination I found what appeared to me to be a very peculiar and somewhat unique condition. The prepuce was much thickened, and elongated about 5 inches; owing to the formation of calcareous material inside, and which evidently surrounded the glans, it was difficult to exactly make out the position of the glans. The orifice of the prepuce was quite closed, and I was rather puzzled to know where the urine could escape. After a careful search I eventually discovered a pin-point hole on the

[1] *Selected Essays and Addresses*, edited by Stephen Paget, and published in 1902.

right side of the prepuce about 1½ inches from where the orifice ought to be.

On micturition a novel condition presented itself. The elongated and almost closed prepuce transformed itself into a bladder large enough to contain practically all the urine at one micturition. In other words, the internal bladder simply emptied itself into another and external one; then the boy was forced to wait until the urine was discharged by very slowly dropping from the pin-point hole already mentioned.

At the operation I had some difficulty owing to the inner lining of calcareous material, and because the prepuce was united with the glans. I commenced by cutting the point off the prepuce with scissors, and then slitting it up so as to allow the glans to be defined, which was no easy matter. After a time the meatus was discovered and a probe inserted into it, and then by a circular cut with scissors the preputial tissue was removed a little higher up. The mucous membrane and skin were now stitched and the wound dusted with iodoform.

For the next few days the urine was discharged quite freely, and the calcareous matter gradually disappeared with the dressing, but I soon discovered that more tissue would require to be taken away as the glans could not be bared; I again operated and disposed of the preputial tissue on a level with the corona, which was now easy to do owing to the disappearance of the calcareous matter allowing of easy separation.

The patient was quite well in a few days, and presented the appearance of an ordinary circumcision. There appeared to be no bladder trouble of any kind as a result of his long-continued abnormal urinary condition.

The case seems interesting because of the somewhat unique condition of the prepuce which had become a second bladder, and that after four years the natural bladder had suffered no injury.

NOTE ON THE UTILITY OF THE SYSTOLE AND DIASTOLE OF THE UTERUS DURING UTERO-GESTATION.

By JAMES OLIVER, M.D., F.R.S.(Edin.), F.L.S.,
Physician to the Hospital for Women, London.

HITHERTO the rhythmic contractions displayed by the uterus during utero-gestation have attracted attention merely on account of

their diagnostic value, and the important *rôle* which they play in the process of gestation has to all intents and purposes been ignored. With these painless contractions which are pathognomonic of uterine pregnancy, and which may recur as frequently as every ninety seconds, we are duly familiar. It is, however, a significant fact that they do not take place until towards the end of the tenth week of pregnancy, the time when the development—not the growth—of the placenta is completed. Prior to this the occurrence of these contractions would be more or less harmful, inasmuch as they would tend to interfere with that co-aptation and cohesion between the placental villi and the uterine wall which is so essential for the maintenance of the integrity of the physiologically-enlarging maternal capillaries. About the tenth week, however, and throughout the whole period of active gestation thereafter, the systolic and diastolic phenomena of the pregnant uterus are salutary, since they lessen materially the disposition to a blood stasis and augment generally the processes of metabolism.

When the pregnant uterus contracts it does so on the amnion with its contained fluid, and, aided by this hydrostatic pressure, there results during each systole a marked diminution, and during each diastole a marked increase, in the blood-content of the uterus. Through the agency of these alternating variations in the state of the uterus, the vascular activity of the organ is heightened, and correlatively all the metabolic processes connected with gestation are accelerated. For these and other reasons the fœtus in utero is more advantageously circumstanced than any extra-uterine fœtus ever can be.

By means of these intermittent contractions the respiratory power of the pregnant uterus is augmented, the supply of food materials is facilitated, and the removal of waste products is accelerated, and these are factors which conduce materially to the well-being of the fœtus. It is very evident, therefore, that much more depends upon the tone of the uterus during utero-gestation than is generally believed.

PARTURITION IN A DEFORMED CHILD.

Note by WILLIAM J. MALONEY, M.D.,
Resident Medical Officer, Kasr el Ainy Hospital, Cairo, Egypt.

THE following case is noteworthy, not only for the deformity, but also for the early age of the mother.

The patient, a Soudanese from Assuan, was in mental development, speech and habits, a child of between ten and eleven years, but as is usual in the superstitious East, she was entirely ignorant of her age, and her relatives were scarcely less so. When approximately five years she was attacked, first by small-pox and later by rickets. Five months before she conceived, menstruation first commenced and once recurred, but its characters were unnoticed.

Her indescribable gait discouraged the native midwives, so when her term was near she was brought to Kasr el Ainy Hospital, Cairo. Her general health was then excellent; she was of large build, and well-developed, but owing to the squatting attitude which represented her upright posture, she was only three feet nine inches high. The pelvic balance and spinal flexures were only slightly affected; the femora were extremely abducted and also gently curved forwards; as the abduction was greater on the left side, the level of the right knee was lower than the left, and the right leg sloped more acutely inwards; the bony prominences of the knee-joints were much enlarged and distorted, the tibiæ bent with a convexity forwards and outwards; and so adducted were the feet, especially the right, that opposite toes tended to overlap.

The following were the pelvic measurements (the figures[1] in brackets are the diameters of the average adult female pelvis):—Interspinous, 17·5 (25); Intercristal, 18 (28·5); External Conjugate, 16 (20); Bi-ischial, 7·5 (11); Tip of coccyx to symphysis, 6 (9·5); True Conjugate, 9·5 (10); Right Oblique at inlet, (?) 10 (12·5); Transverse at inlet, (?) 8 (13) cubic centimetres.

Labour began and slowly progressed; after eighteen hours the diameter of the "os" was only about one and a half inches; the pains were irregular and feeble; and, as the mother's strength was failing and her pulse-rate rapidly rising, I ended the labour. The fœtal head, still unfixed, could not be pushed into the pelvis, but its birth by the natural channels seemed just possible if pronounced moulding and flexion took place.

The patient was chloroformed and put in the "Walcher" position; the os digitally dilated, the presenting head rotated into the normal position and well flexed, and the membranes ruptured. Forceps were then applied and from time to time re-applied as rotation proceeded and flexion increased. After thirty minutes' cautious pulling the head was born, and the body followed without mishap. Fifty minutes later the placenta spontaneously separated.

The puerperium was uneventful; the temperature, pulse-rate and lochia were normal, the parturient canal was intact, and the only evidence of undue pressure was hæmaturia, which ceased on the fourth day. Lactation was fully established by the fifth day, and the amount of milk produced amply satisfied the infant's needs.

The baby, a normally-developed healthy girl, weighed when four days old 2900 grms.; breast-fed, she grew steadily and reached 3800 grms. at the age of seven weeks. Ten days after birth, when the moulding had quite disappeared, the diameters of the fœtal head were:—Biparietal, 9·5; Suboccipito-bregmatic, 10·2; Supra-occipito-mental (Budin's maximum diameter), 13·7; and Occipito-frontal, 12·5 cubic centimetres.

Among native women of warm climates menstruation occurs at an early period. Charpentier[2] states that puberty in a race is younger the nearer the habitat of the race to the Equator, but Schukitz's researches among the races of the Austrian Empire, and the experience of colonists, show that climate is not the sole factor. The age of menstrual onset among the Soudanese is unknown. Indian women[3] reach puberty two years earlier than Europeans; Ahmed Isa[4] gives 12 years 7 months as the average for Egypt, India, and Southern Asia; and Shukry[5] states twelve years as the age among Egyptians—from whom the Soudanese will not greatly vary. The precocious advent of menstruation is not rare; Stirton[6] and Raciborski have cited many cases where the menstrual flow began in the first months or years of life; Campbell[7] records one in which it dated from birth; Prochownick[7] one from one year; and Mafooz,[8] in Egypt, alludes to its occasional appearance from the age of two. Motherhood at tender years is thus not only possible, but also of somewhat frequent occurrence. Phillips[9] states that Indian women are often mothers at the age of nine years; Lutaud[10] and Küssmaul[10] record cases of pregnancy between seven and eight, and Rowlett,[10] Cortis, and Macnamara at the age of ten. In this case the precise age was unattainable; menstruation commenced somewhere about the ninth year and delivery took place between the tenth and eleventh.

The deformity of the lower limbs profoundly modified the external moulding influences of the pelvis, which acquired a slightly bilaterally-contracted shape, although the distortion was much less than the patient's appearance justified. The pelvic capacity proved greater than measurement indicated, probably because of the mobility of certain parts of the pelvic framework

and of the incompleteness of ossification; the ilium, ischium, and pubis were still represented in the "Y"-shaped cartilage, whose limbs radiate from the acetabulum; cartilaginous plates existed in the symphysis pubis, sacro-iliac and sacro-coccygeal joints, and also in the individual sacral and coccygeal vertebræ, which were not yet ankylosed, the swelling and softening of these cartilaginous elements rendered the normally-rigid canal capable of yielding to the dilating force of the fœtal head.

Humphry[11] states that the pelvis is smaller in the negress than in the European. At the age of nine years the European female pelvis measures at the inlet two and seven-eighths inches in its antero-posterior diameter, and two and three-quarters in its transverse. In this deformed Soudanese child the pelvis was of more than average dimensions, and the capacity for motherhood was not inferior to that of an adult, for she bore a normal infant and was able to suckle it.

I am indebted to Dr. Dobbin, to whose service the case was admitted, for permission to publish this note.

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[2] Charpentier, *Traité pratique des accouchements*, vol. i. p. 85, Paris, 1889.

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[4] Ahmed Isa, *Hygiene of Women* (in Arabic), p. 21, Cairo, 1904.

[5] Shukry Pasha, quoted by Ahmed Isa, *loc. cit.*

[6] Stirton, *Glasgow Medical Journal*, p. 1 *et seq.*; quoted by Pozzi, *Traité de gynécologie*, vol. ii. p. 767, Paris, 1907.

[7] Pozzi, *loc. cit.*

[8] Naguib Mafooz, *Manual of Midwifery* (in Arabic), p. 49, Cairo, 1908.

[9] Phillips, *Diseases of Women*, p. 54, London, 1897.

[10] Pozzi, *loc. cit.*

[11] Humphry, *Human Skeleton*, p. 447, London, 1858.

[12] Burns, quoted by Tarnier and Cazeau, *Obstetrics* (Hess's Translation), p. 54, London, 1885.

THE ROYAL MEDICAL SOCIETY, WITH SOME REMARKS ON MEDICAL EDUCATION.[1]

By Sir DONALD MacALISTER, K.C.B.,
Principal of the University of Glasgow, and President of the General Medical Council.

The task you have given me is at once easy and difficult. It is easy because the toast of the Royal Medical Society—your noble selves, in other words—is assured of an enthusiastic response at this gathering. Indeed, I do not know why it is not proposed, like the health of "The King," without any but the briefest speech to commend it, on the ground that it speaks for itself. I throw out that suggestion to you in the interest of my successors. Knowing the elaborate and deliberate manner in which you proceed when making changes in your laws and customs, I fear it is too late to expect any anticipatory action in my own favour now. Your ancient laws include an awe-inspiring chapter "of providing subjects for dissertations," and your President is invested with no less awe-inspiring power to enforce that and all other laws. He has assigned me this toast as the subject of my dissertation, and I have not even the feeble satisfaction of being able to "challenge him to a duel"—for that is forbidden by the same laws.

What makes the task difficult for anyone who has not had the advantage of sharing your privileges is just the intrinsic importance of the theme itself, and the high standard of excellence which you justly demand of all who are called upon to treat it. *Maxima reverentia debetur—senioribus.* What depth of reverence is due to the Senior Medical Society in the United Kingdom—a Society whose life extends over the bounds of three centuries, and is still in its vigorous prime? You were older than Moses ever was when the General Medical Council, now a stripling of fifty years, was born. And when I regard your legislative output, as contained in a precious codex entrusted to me by your officers, it seems as if the mantle of the law-giver of Israel had descended upon you. Your history bears the scars of the '45 in the eighteenth century, and of the Napoleonic Wars in the nineteenth. Among your nursing-fathers were William Hunter, and Cullen, and Black, whom the ancient University of Glasgow enrols among *its* ancient glories. For a century and a third you have possessed your own buildings, and have looked "the whole world in the face" with as

[1] The toast of the evening, at the Annual Dinner of the Society, 9th February 1909.

good reason as the village blacksmith, for you "owe not any man."

In sober earnest, one may apply to you what Shakespeare's Master Constable says of himself: "*I am a wise fellow*"—that goes without saying: "*and, which is more, an officer*"—with four presidents a year and a multitude of subordinate functionaries, that may pass for a just boast: "*and, which is more, a householder*"—si testimonium requiris, circumspice: "*and, which is more, as pretty a piece of flesh as any is in Messina;*" those who knew that famous city before its late most pitiful calamity will agree that this implies no mean standard of physical beauty; yet such a company as this (to say nothing of the lady medicals) need not shrink from the comparison: "*and one that knows the law, go to*"—if you don't, I refer you to chapter xii., "Of fines, and the collection of them:" "*and a rich fellow enough, go to*"—witness your accumulating Capital Fund, and your flourishing finances generally: "*and a fellow that hath had losses*"—even that mark of respectability has not been wanting, to judge from the records of 100 years ago: "*and one that hath two gowns, and everything handsome about him*" —that may well refer to the Bachelor's gown and the Doctor's; to the Royal Charter of Georgius Tertius; to the imposing diplomas you confer on the *ingenui*, or *eximii*, or *spectatissimi* whom you are pleased to honour, and each of whom you, in the handsomest way, describe as *ornatissimus;* to the many historical treasures in your hall; and, lastly, to the sumptuous appointments of this banquet. You are justified, as few such societies are, in claiming that you have "everything handsome" about you, in the material sense.

In the intellectual sense your handsomeness is equally unquestionable. A roll that includes Oliver Goldsmith, and Charles Darwin, and Joseph Lister among its ordinary members is glorified for all time. But you handsomely allow Cambridge and Glasgow to share with you a portion of the glory these names have shed upon the world, and, in the name of both Universities, I here make my acknowledgments. In the like spirit of magnanimity you admit to your list of honorary and corresponding members those who have won or are winning fame in all the fields of medical science, at home or abroad, until the list scintillates with stars of the first magnitude. It relates you by personal links to the best that has been achieved in each generation for a hundred years and more. It constitutes in itself a patent of scientific nobility known and approved of all men. Of the Society it may be said, *noscitur a sociis—honoris causâ.*

And again, as in private duty bound, I acknowledge, on behalf of a third institution which I happen to represent, the hospitality of your Society to the members of the General Medical Council. In 1822 you awarded your honorary diploma to Benjamin Collins Brodie, and thirty-six years afterwards he became the first President of the Council. In 1868 you chose William Turner for the same distinction, and thirty years afterwards *he* was called by acclamation to occupy the President's chair. Of the two gifts to the Council, the best and greatest was the last, for the Council never had an abler, a wiser, or a juster President. At its jubilee last November it offered him its tribute of gratitude and affectionate regard. To-night you will not think it inopportune that I cordially recall that tribute, and add my own personal expression of admiration and esteem for a Chief who is also yours. He made the place he vacated harder to fill indeed; but he also made it more honourable by his tenure, and therefore more worthy of the best efforts of his successors to follow his example.

I am aware, sir, that according to one of your venerable laws, "If any *personal* . . . . *expression* should occur during the evening, the President shall immediately censure it; should the President be inattentive to this part of his duty, any member may remind him of it, and may require him to take the opinion of the Society immediately." I am as prepared as any member can be to bow to the law in question, and "to make such concessions as the Society may judge proper." But I would fain gather from your Olympian calm, and from the absence of any reminder on the part of your brethren, that such a "personal expression" as I have been constrained to make respecting my trusty friend and most honoured colleague, your Principal, may not be deemed "impolite or disorderly," within the meaning of the law, at any rate on such an evening as this.

As I glance over your lists, my eye catches the name of many another who has served the State and the profession as a member of the Council during my twenty years of office. Sir John Struthers, Sir William Mitchell Banks, Sir Patrick Heron Watson, Sir Dyce Duckworth, Sir Thomas Fraser, Sir Victor Horsley, Dr. James Little, Dr. Richard Caton, Dr. Robert Saundby, and Sir Clifford Allbutt are among those I recognise. They form a goodly fellowship. Everyone of them, by his work and worth, has gained the applause of his brethren, though some, to our loss, have passed beyond these voices.

I do not doubt that the tradition you have thus established

will be maintained, and that many of your members will hereafter take the places we now occupy in the Council. You will be unlike any other body of medical men with whom I am acquainted if you do not criticise it freely, and the more freely the less you know of its structure and functions. We do not complain; we are used to criticism. We get it from the public when we don't do something or other, and from the profession when we do, and *vice versâ*. We have to keep the balance even according to our lights and our means. But we confidently expect that when *you* have gained seats at our council-table you will help, by your brighter lights and ampler means, to get things really right, and to satisfy everybody—yourselves included.

On the side of the medical profession our primary function, like yours, is educational. The kind of education the State has put under our charge is not education for culture, considered as an end in itself. The Medical Acts have a strictly practical end in view. They bid us see to it that a medical man, whatever else he professes or possesses, shall possess "the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery." A university may properly impart to and demand from its medical graduates, who go forth from it with an academic laurel as well as a licence to practise, a higher and wider education than this. It may rightly insist on more "knowledge," but it may not be satisfied with less "skill." Greater proficiency on the one side must not be purchased at the cost of less efficiency on the other. The one concerns the reputation of the medical graduate as a man of learning, and of the school whose degree he holds; the other touches the public safety, and it was in the interest of the public safety that the Legislature created the Medical Council. You may remember what Aubrey says of William Harvey, who discovered the circulation of the blood: "Though all his profession would allow him to be an excellent anatomist, I have never heard of any who admired his therapeutic way." That, figuratively speaking, puts in a nutshell the antinomy which the Council and the Universities, the Medical Corporations and Societies, and the profession at large are to-day considering seriously. In the public interest it is urgent that some means of reconciling the antinomy shall be found. Knowledge of the ancillary sciences grows more abundant and complex. To compass it completely, much more than the first half of the present medical curriculum is required. Modern advances in medical and surgical treatment, in the *art* of healing and of prevention, put new powers for good

into the doctor's hands. But to learn to use them skilfully needs more study in the wards and more practice at the bedside than before. For this, more than the second half of the present curriculum is required. When the two half-sections are more than the whole will contain, something must *give*. Shall it be the first half, or the second half, or the whole? *There* is the practical problem, and I commend it to the Royal Medical Society as a problem worthy of its statesmanship. The one solution that is barred, from the point of view of the public, is that which would crush up or crush out the second half. The public is made up of patients, actual or potential. That is why the public thinks it worth while to make legal and educational provision for the production of doctors. And, as Oliver Wendell Holmes said, every "patient has a right to the cream of his doctor's life, and not merely to the thin milk that is left after 'science' has skimmed it off. The best that a physician can give is never too good for the patient."

The rise of Edinburgh, as a school of practical medicine for Scotland, and its steady development into a school of medicine for the Empire, dates from the establishment 160 years ago of clinical classes by Monro and Rutherford. By the thoroughness of their clinical teaching, and the sufficiency of the facilities they offer for acquiring clinical experience and skill, the Scottish universities and schools have won pre-eminence, and their alumni have won fame, as practitioners to be trusted, within these islands and beyond the seas. What they have thus won well they can keep surely, only by pursuing the same method and, if possible, bettering it. But the best of teaching and the amplest of facilities will not suffice if the student has not time enough to profit by them to the full. Clinical skill cannot be crammed. Time and a certain detachment of mind are factors in the product. If by our arrangements we stint these, it is practical efficiency that suffers; and it is by their practical efficiency that doctors, Scottish or non-Scottish, must in the end of the day stand or fall. It would not become me to forecast, even if I could, the changes that may be needful to secure us against the curtailment or overcrowding of the period destined for clinical study in our Scottish curriculum. But I trust that when the need arises, if indeed it has not arisen already, we may be granted freedom enough not only to institute but to modify as circumstances require the changes I refer to. The Medical Council will look after the minimum curriculum; that is its function. It is on the super-minimal after the bare essentials are provided for, on the higher

instruction provided, and on the stricter standards enforced, that the *special* reputation of a school or a university chiefly depends.

That brings me back to my proper subject. For the peculiar value and significance of the Royal Medical Society is just this, that for generations it has provided something over and above the routine course, excellent as that has been, of the Edinburgh schools, for those who enjoy the high privilege of its active membership. It enjoins on each of its members the practice of independent observation and reflection, that he may do himself credit by his statutory dissertation. It exercises his powers of free discussion and criticism, until he learns what Dr. Osler called "that all-important acquirement—to think and talk while he stands on his feet." It affords him discipline in the art of self-government, and the habit of obedience to the corporate law. It encourages the cultivation for the general good of his special tastes, whether these be literary or scientific, speculative or practical. And, lastly, it enriches him spiritually and intellectually, by making him the heir of a great historic tradition, and stirring in him the ambition to hand on that tradition, enhanced if he can enhance it, but at all events unimpaired.

In offering you this toast I cannot do better than remind you of a fine passage in the "Medical Essays" of one of your honorary members, the Professor of Anatomy in Harvard University, who is better known to the world as The Autocrat of the Breakfast Table. "Not to make silver shrines for our old divinities, even though by this craft we should have our wealth, was this Society organised and carried on by the good men and true who went before us. Not for this, but to melt the gold out of the past, though its dross should fly in dust to all the winds of heaven, to save all our old treasures of knowledge, and mine deeply for new, to cultivate that mutual respect of which outward courtesy is the sign, to feel together, to take counsel together, and to stand together for the truth, now, always, and everywhere;" for this your fathers instituted, and you accept, the offices and duties of this time-honoured Society.

OBITUARY.

DAVID JAMES HAMILTON.

Till the year 1882 pathology had not been taught as a separate subject in Aberdeen University. It was left to the Professors of Medicine and of Surgery and to the Pathologist at the Royal Infirmary to give what instruction was possible in the time and with the very limited means at their disposal.

The broader-minded members of the medical faculty and of the medical profession realised how seriously the medical school was suffering from this defective state of affairs, and set themselves to remedy the matter. Through the munificence of Sir Erasmus Wilson, a native of Aberdeenshire and the son of a medical graduate of Aberdeen, the foundation of a chair of pathology became possible.

The first professor appointed to the chair was D. J. Hamilton, at that time an Extra-Mural Lecturer in Edinburgh. His training was of a wide character and in the best schools. He had studied under, among others, Rokitansky, Stricker, Recklinghausen, Hoppe-Seyler, Virchow and Pasteur. He was thus well equipped to undertake the teaching of pathology on a broad basis, and with due regard to the pathological, anatomical, to the experimental, to the chemical and to the bacteriological sides of the subject.

Professor Hamilton had already at this time begun to make a name for himself as a teacher and investigator. The class on morbid anatomy and histology, which he had initiated in Edinburgh, was the first of its kind in Great Britain, and the subject, which was a voluntary one, at once became popular with the students.

When Professor Hamilton came to Aberdeen he had before him a great task and a great opportunity. At first he had not even a class-room to himself, but had to share a lecture-room with two other teachers. Through the kindness of a colleague another room became available for his practical class. Later, a room, little better than a garret, was fitted up as a bacteriological laboratory. All this arose from no unwillingness to help the new teacher and the new subject, but was unavoidable from the lack of room at the disposal of the University authorities.

The difficulty of accommodation was not the only one which the new Professor had to face. For a short time, at the outset, he was cut off from all pathological material, as he had no *locus standi* at the Royal Infirmary. This, however, was soon rectified by the voluntary retirement of the pathologist, and the appointment of Professor Hamilton to the post—an arrangement which was of the greatest benefit to the University and to the hospital.

Rumours of Professor Hamilton's excellence as a teacher had reached Aberdeen before his appointment to the chair, and a number

of students had gone to Edinburgh with the view of taking out his class. The report brought back by them was enthusiastic, and from his first session Professor Hamilton's popularity as a teacher was assured.

In addition to the students many of the older men in the profession —physicians and teachers in the Royal Infirmary—entered the class and became young again, developing into enthusiastic pathologists. One of them—a senior physician—in speaking to the writer of Professor Hamilton's remarkable influence as a teacher, stated that for fifteen years after attending that class, pathological histology was his constant hobby, and from his statements it was evident that he had made many interesting and valuable observations, some of which have since been published by others.

During those early days in Aberdeen much of Professor Hamilton's time was devoted to the preparation of his *Text-Book of Pathology*, and he thus found vent for his energies which he probably felt were somewhat hampered owing to the want of suitable accommodation and equipment. For many years this book has been regarded as the most important work, of that character, on the subject of pathology which has appeared in the English language.

After a few years the want of accommodation was removed by the formation of a new and excellent post-mortem department at the Royal Infirmary, and of a department at the University which was admirably suited for the teaching of elementary pathology, both on its systematic and practical sides. It was largely through Professor Hamilton's urgency that these results were attained.

The new department allowed the subject to be taught as a whole, instead of being divided into a systematic and a practical course which entailed a great deal of overlapping and repetition. After a lecture or series of lectures had been given on a subject or group of subjects in the lecture theatre, the students adjourned to the practical class-room, where each had the opportunity of preparing and examining specimens illustrating the more important of the conditions which had been under review. He thus organised and equipped the Departments of Pathology, both in the University and in the Infirmary, so as to make them a credit to both institutions, and the admirable manner in which he directed the work of these departments placed the Aberdeen School of Pathology in a leading position in this country.

Professor Hamilton did much work for the good of the community in the North of Scotland. It was largely through the agency of his department that the public benefited by newer methods of diagnosis and treatment which had a bacteriological or pathological basis. In connection with the Public Health Departments of Aberdeen and some of the neighbouring counties, he introduced the bacteriological diagnosis of diphtheria, of typhoid fever, of tuberculosis, and the examination of water by bacteriological methods.

His investigations have embraced a wide range of subjects. He has published works on the Nervous System, on the Healing of Wounds, and on Bronchitis. His research on tuberculosis, the findings of which were in direct opposition to the statements of Koch, has been confirmed and strengthened by the recent work of many observers.

In recent years Professor Hamilton has given much attention to the diseases of sheep. His interest in this subject dated from the year 1881, when he was the Chairman of the Highland and Agricultural Society's Commission, appointed to investigate "louping-ill" and "braxy." In 1897 he resumed the study of braxy, and after a time received a Government grant to enable him to pursue the subject further. As the result of a suggestion from the Highland and Agricultural Society the inquiry was taken over in 1901 by the Board of Agriculture, and Professor Hamilton was appointed Chairman of the Departmental Committee. As the result of his work he concluded that the braxy of Scotland and the bradsot of Norway were the same disease, and confirmed the work of Ivar Neilson and of Jensen, who had previously demonstrated that the disease was bacillary in origin.

In the course of these investigations Professor Hamilton observed and described a bacillus as the infective agent in louping-ill, and described two new diseases and the bacilli to which he attributed their causation. An enormous amount of work was given to the details of these investigations, the report of which appeared in 1906. As there have been few investigations in this field of bacteriology, the value of these results cannot be determined till the ground has been covered by other workers.

Professor Hamilton was undoubtedly one of the leading teachers of pathology of his period in Great Britain. He spared no pains in making his lectures models of scientific exposition, and constantly kept before his pupils the value of experimental methods. His manner of lecturing was vigorous, incisive, and effective, with the result that he left on the students a vivid impression of the subject-matter with which he had been dealing. His whole system was a practical illustration of the value of first-hand knowledge obtained by observation on the part of the learner.

After nearly twenty years, however much one's views may have changed in regard to the standpoint which he upheld, one recalls with pleasure and enthusiasm his brilliant experimental lectures on inflammation. This may be mentioned as an example of many subjects dealt with by him in an equally attractive manner.

His teaching of pathological anatomy and histology was particularly effective. He would have the men see what was to be seen, and even the weakest men in every class were forced to carry away a certain amount of knowledge which they had acquired by their own observation under his compelling guidance. He thus trained those under him

to become observers, and enforced on them the necessity of accurate method. He had no toleration for anything slipshod, and many have greatly benefited by his influence in this direction.

In his manner to the students Hamilton, especially in his early days in Aberdeen, was masterful and almost brusque, but in spite of this he gained the respect and admiration of all, and the affection of many; for his pupils were quick to recognise that here was a man at home with his work and thoroughly in earnest in his desire to impart his knowledge to others.

Professor Hamilton had considerable artistic gifts, as is shown by the many drawings in his *Text-Book*, and by the beautiful models of pathological specimens (a large number of which were painted by himself), and which are a marked feature in the museum which he has founded.

He had many interests and hobbies outside his professional work, and he brought to these the same keen, intellectual interest and zest which were such a characteristic feature of the man.

During the quater-centenary celebrations of Aberdeen University in 1906, there was published a volume of *Studies of Pathology* (edited by Dr. Bullock), consisting of contributions by his past students, which was intended as a tribute to him, and to commemorate the fact that he had held the Chair of Pathology for almost a quarter of a century.

During his career Professor Hamilton had obtained many distinctions, among them the LL.D. from his Alma Mater, and the Fellowships of the Royal Societies of Edinburgh and London.

Among his colleagues his resignation of the Chair of Pathology in Aberdeen caused much regret, which was thus expressed by Principal Lang:—

"There can be only one feeling, and that a feeling of deep and sincere regret that he shall no longer be one of our staff of teachers; that he quits a service which extends over 26 years, and has shed a lustre not only on his own department, not only on the medical school, not only, indeed, on this University, not only on the four Scottish Universities, but on a very wide area beyond. We shall always recollect our illustrious friend—the first Professor of Pathology in this University—and among our most valued possessions shall be the recollection of his personal qualities which endeared him to us all, his geniality of nature, his sympathy with all that pertained to science, to literature and to art, and the loyalty of his co-operation in all affairs of the University that he so sincerely loved."

Professor Hamilton was essentially a generous-minded, warm-hearted man, and his death at a comparatively early age will be regretted by his old students in all parts of the world. G. D.

Amongst the Old Edinburgh pupils of Professor Hamilton, there can be but one feeling at his comparatively early death—that of the profoundest sorrow. Although it is more than a quarter of a century since he left Edinburgh, the impression made by his teaching is still fresh in their mind. They remember how he returned from Vienna full of enthusiasm for his subject and with a thorough acquaintanceship with the then modern methods of pathological investigation, and how he triumphed over the difficulties in the shape of the miserably inadequate accommodation and equipment of the laboratory allotted to him, and made the first courses of practical pathological histology taught in Great Britain a conspicuous success. In these days practical pathology was a voluntary class, not required for graduation, but the influence of Hamilton's teaching was such that he attracted not only University students, but men from the extra-mural schools in Edinburgh and from other universities in Scotland. He had a marvellous faculty of compelling one, even in spite of oneself, to take an enthusiastic interest in his subject. It was simply impossible not to be attentive to and not to learn from Hamilton. His enthusiasm and the influence of his personality dominated every member of his class. While we recognised that he might not be always right in his views, we were constrained to be directly interested in his subject in such a way as to make it a working part of our mental equipment. Every one of us is grateful for his inculcation of the method of personal observation and for the mental discipline it gave us—much to be desired in these days of "spoon-feeding."

There was general regret and surprise amongst his old pupils and amongst the profession in Edinburgh generally that Hamilton was not selected to fill the chair of his former chief, and that during the short time in which he remained in Edinburgh as an extra-mural lecturer his class fell to an insignificant number of students. It was felt that there was something wrong in a system which had made it impossible for our brilliant teacher to earn a livelihood by the teaching of a subject for which he had made his Alma Mater famous, and which should have actually driven him in despair to think of starting general practice. His appointment to the northern University was accordingly received with special satisfaction by his numerous friends, much as they would have wished to retain him.

In Aberdeen he has trained up a school of pathologists whose works have already done honour to their University. In Edinburgh he had begun to do the same, and more than one occupant of a pathology chair owes his position to the direction given to his studies by Hamilton. All over the world there are men who have carried into their daily work the habits of close observation and of clear thinking, for which they can never cease to be grateful to their old master.

A. B.

HENRY E. CLARK, C.M.G.

By the sudden death of Mr. Clark on 3rd February at the comparatively early age of 63, Glasgow has lost a prominent anatomist and surgeon, and pupils in all parts of the world a much respected teacher and friend.

Mr. Clark was a native of Warwickshire and received his early education at Stratford-on-Avon. He came to Glasgow in 1867 and pursued his medical education at Anderson's College and the University. He qualified in 1870, when he became Demonstrator of Anatomy at Anderson's College under Professor George Buchanan. Here his decided bent for anatomy showed itself, and he speedily received promotion, becoming Lecturer on Anatomy at the Royal Infirmary Medical School, and later, on the foundation of St. Mungo's College, the first Professor of Anatomy. He was also appointed Assistant-Surgeon at the Royal Infirmary and at the Eye Infirmary, becoming in course of time full surgeon at both of these institutions. Most of his time was, however, devoted to anatomy, and there is no doubt that this was the subject in which he was most successful. He was at home in the dissecting-room. He was a brilliant lecturer, a most artistic dissector, and a splendid demonstrator. He could always gather a crowd of students around him, who eagerly followed his prelections, which though minute and painstaking, were always clear and often brightened in unexpected ways by happy phrases or humorous modes of description. His students loved him, and his classroom speedily became the busiest centre of student life in the College.

During this period Mr. Clark did a large amount of literary work. He edited for a time the *Glasgow Medical Journal*. He revised and edited the 9th, 10th and 11th editions of Wilson's *Anatomist's Vade-mecum*, for long a popular text-book. He also wrote an elementary text-book on Anatomy suitable for nurses or others who did not require the minute details of the larger works. He also made numerous contributions to the *Medical Journals* on anatomical and surgical subjects.

In 1892, consequent on the changes caused in St. Mungo's College by the transference of Sir William Macewen to the University, Mr. Clark was made Professor of Surgery, and this post he held along with his Surgeoncy to the Royal Infirmary till the age limit compelled him to retire three years ago.

He became a Fellow of the Faculty of Physicians and Surgeons in 1876, and was elected President in 1903 and again in 1904. During this period he was elected to an Honorary Fellowship of the Royal College of Surgeons, Edinburgh. For many years he was an Examiner in Anatomy and Surgery on the Joint Board of Examiners for the Triple Qualification.

He also took a great interest in the work of the Dental Hospital in Glasgow, and in arranging the courses of instruction and examination of dental students.

When the South African War broke out, Mr. Clark offered his services as Surgeon to the St. Andrews Ambulance Association, and was sent out to take charge of the Scottish National Red Cross Hospital at Kroonstad, Orange River Colony. The services of himself and his dressers were of the greatest value, and on his return home he was honoured with the decoration of C.M.G.

Mr. Clark was a pleasant companion. He delighted to pour forth to his intimate friends the treasures of his experience and travel, and his death has brought a sense of personal loss to many in the city of his adoption. D. N. K.

FRANCIS CADELL.

YET another gap is caused in the senior ranks of the profession in Edinburgh by the death of Dr. Francis Cadell, whose ashes were placed in the family burial place in the Dean Cemetery only a few days ago. He has soon followed his old friend and colleague in the Royal College of Surgeons, Argyll Robertson, whose death we had lately to deplore. He was a son of John Cadell of Tranent, a member of the Scottish Bar. His mother was a Dunlop of Keppoch. He was educated at the Edinburgh Academy and took his degree at Edinburgh in 1866 and the F.R.C.S. in 1870. Few men were better known by sight in Edinburgh than he; his striking figure and well-known visage could hardly escape recognition. In his practice his gentle and kindly manner endeared him to his patients. He held several important public appointments, and also made contributions to medical literature, the most important of these being on Syphilis, on the Contagious Diseases Acts, and on Vaccination. In regard to syphilis he was a dogged and persistent anti-mercurialist, and to the end adhered to the views he had imbibed from his old master, Syme, who, as is well known, held that most of those intractable cases in the tertiary stage, ulcers and the like, were the result of mercurial treatment.

His friends used often to start discussion on this subject, and try to shake the foundation of his faith in the old view, only with the result of rousing his innate conservatism and persistency in maintaining it. During later years he devoted much of his time to vaccination, and was appointed by the Local Government Board Public Vaccinator and Teacher at the New Town Dispensary, where he taught large classes of students with much acceptance. His connection with the Dispensary was a long one, and he took a keen interest in the whole work of the Institution, and his labours on its behalf will always be gratefully remembered. One of his later appointments was that of

Secretary to the Royal College of Surgeons, which he only relinquished on his retiral from active work. He always took a keen interest in the affairs of the College.

In his social qualities and relations the name of Frank Cadell will recall, especially among his more intimate friends, many happy recollections. He was always, and by nature, the type of a courteous gentleman. His professional status and social qualities gained him entrance to the coveted membership of those select coteries or clubs, such as the Æsculapian, Medico-Chirurgical, and Round Table, where his quiet and ready wit, very characteristic and peculiar to himself, and at times intensely sarcastic, had ample opportunities for indulgence. He was a keen sportsman and good shot, and few men could beat him at billiards. He was devoted to golf, although not a brilliant exponent of the game, which he played for love of it and spurned the idea of betting in any form or shape, and could never be induced to have either a ball or a "modest" half-crown on. He was one of a professional quartet who for more than a quarter of a century played every Wednesday on Musselburgh Links. Alas! only two now remain, Cadell and James Dunsmure having gone on before. *Requiescant in pace!*

J. C.

JOHN LINDSAY STEVEN.

One of the most startling and tragic occurrences of recent years in the medical profession of the West of Scotland has been the death of Dr. John Lindsay Steven, which took place in the early morning of Sunday, 14th February.

To but a few of his professional friends was it known that he was ill. Until almost the end even these did not realise that his illness was other than of the most simple character.

It has been said that the final illness of a medical man is seldom of a protracted character; it is often startlingly brief. There would appear to be much truth in such a statement, and many recent instances of deaths of prominent members of the profession might be cited in support. Dr. Steven's last illness is not the least notable example.

Up to about ten days before his death Dr. Steven had been actively engaged in the prosecution of his large and busy consulting practice, and was conducting, apparently with all his natural vigour, enthusiasm and earnestness, the daily work of his clinique in the Western Infirmary. A chill caught in the course of a professional engagement out of town led to his taking to bed on account of what was thought, at first, to be only a comparatively trifling cold. Until within three days of his death he did not seek the advice and assistance of any medical colleague, and when at last the gravity of his condition was realised, and assistance was sought, it was at once

appreciated that he was beyond all human power to help. An acute exacerbation of a chronic renal condition, complicated by acute pericarditis with effusion, led rapidly to the fatal termination. The closing hours were marked by great physical distress, borne with the greatest fortitude and patience. Consciousness was preserved until the end, and, realising full well the issue that alone was possible, Dr. Steven faced that issue with steadfast courage and a sure hope.

Dr. Lindsay Steven received his early professional education in Glasgow, graduating with honours in the University of Glasgow in 1880, and obtaining the Brunton Memorial Prize as the most distinguished medical graduate of that year. The degree of M.D. was obtained in 1884, and in 1889 he became a Fellow of the Faculty of Physicians and Surgeons.

Subsequent to graduation he studied at various periods in the medical schools of Leipzig, Berlin and Paris, devoting himself particularly to the study of clinical medicine and pathology.

The earlier years of his professional life were, like the later, characterised by strenuous and unremitting labour. In 1881 he became assistant to the late Professor Joseph Coats, being associated with him in the teaching of pathology in the Western Infirmary, Glasgow, for eight years. In 1889 he was appointed Pathologist to the Royal Infirmary, and for six years thereafter he lectured on pathology in St. Mungo's College and Queen Margaret College. One of his earliest important scientific contributions was his text-book on *Practical Pathology: An Introduction to the Practical Study of Morbid Anatomy and Histology*, which was published in 1887.

Though directing his attention during these years more particularly to pathological studies, Dr. Steven continued closely in touch with the work of medical wards, first in the Western Infirmary and later in the Royal Infirmary, and he was one of the earliest physicians on the staff of the dispensary connected with the Sick Children's Hospital.

In 1895 he was appointed Visiting Physician and Lecturer in Clinical Medicine to the Glasgow Royal Infirmary, and shortly thereafter became Lecturer on Systematic Medicine at Queen Margaret College. On the death of the late Dr. James Finlayson in 1906, Dr. Lindsay Steven was unanimously appointed Visiting Physician and Clinical Lecturer to the Western Infirmary, where from the first he attracted large classes of students to his clinique.

For eleven years Dr. Steven was one of the editors of the *Glasgow Medical Journal*, and his contributions to medical literature were many and valuable. In 1892 he published a monograph dealing with *The Pathology of Mediastinal Tumours*, which attracted considerable attention. In 1900 he published a volume of *Lectures on Clinical Medicine*, which contained much interesting, instructive and thoughtful reading. Of his other publications, many were of great value, and all were charac-

terised by careful investigation and accurate scientific insight. Perhaps the most notable were—*The Pathology of Suppurative Inflammations of the Kidney* (his graduation thesis), 1884; *On Fibrous Transformation of the Heart*, 1885; *Lectures on Fibroid Degeneration and Allied Lesions of the Heart, and their Association with Disease of the Coronary Arteries*, 1887; *The Pathology of Fibrous Degeneration* (*Fibrous Transformation*) *of the Heart, with Twenty-One Cases*, 1893; *A Contribution to the Pathology of the Coronary Arteries of the Heart, based on an Analysis of Two Hundred and Thirty-Eight Cases*, 1898; *Morgagni to Virchow: An Epoch in the History of Medicine* (his presidential address to the Glasgow Medico-Chirurgical Society, October 1905). His contributions to medical literature number over one hundred.

During the period when he was actively engaged in pathological work Dr. Steven was recognised as one of the foremost pathologists in the West of Scotland, and the influence of his pathological training upon his development as a scientific physician was generally appreciated. As a teacher, he combined the faculties of clear speech, accurate description, and an attractive and lucid style, such as brought him, all through his career, large and appreciative classes. His teaching, as also his public utterances, were effective and fluent, and it is all the more notable that this effectiveness and fluency were achieved in spite of a natural peculiarity of intonation which was only dominated by powerful and continued persevering effort.

Dr. Steven won for himself a very high reputation amongst his professional brethren in Glasgow and the West of Scotland. Elected in 1895 a member of the Council of the Faculty of Physicians and Surgeons of Glasgow, he was appointed in 1903 its representative on the General Medical Council, continuing to hold this important office till the time of his death. He held at various periods important offices in the local medical societies, and in 1905 became President of the Medico-Chirurgical and Pathological and Clinical Societies. Since the death of Dr. James Finlayson, Dr. Lindsay Steven occupied in Glasgow, and probably in the whole of Scotland, an almost unique position as a student of the history of medicine. His presidential address to the Medico-Chirurgical Society quoted above stands as a notable proof of his faculty in the direction of historical research.

While thus summarising the work and achievement of Dr. Lindsay Steven, the scientific pathologist, historian and physician, it would not be fitting to neglect the other aspects of his life and work. He was for years an earnest advocate of temperance. For years he was a total abstainer. He was a man of deep religious convictions, and for many years—even when his daily labours were of the most strenuous and unremitting kind—he conducted every Sunday a Bible class in connection with the church with which he was associated. Himself a worker, he expected those associated with him to work hard and conscientiously,

and he had the faculty of obtaining from his assistants the most ungrudging support. For all such support and assistance he always accorded credit in the most generous manner. To his former resident assistants, as also to nurses and students associated with him, he was always a warm friend, and never spared himself any trouble when his assistance and support were desired.

The death of Dr. Steven leaves the profession in Glasgow with a sense of blankness such as it is difficult to describe or adequately to explain. He occupied a position, as it were, between the older men and the younger men, and amongst the leading physicians of Glasgow and the West of Scotland he was practically alone in that intermediate position. Of transparent honesty, of open and open-minded readiness to consider a subject from all points of view, with the faculty of clear and accurate thinking, he combined a courage and determination of character which made him an outstanding force in the public life of the profession. Those who knew him only in his public capacity will appreciate the blank caused by his untimely death. Those who, like the writer, were privileged in having known him for many years in a much closer and more personal relationship must feel in addition a sense of the deepest personal loss.

What was probably his last public speech was made on 22nd January, at a meeting of the Medico-Chirurgical Society, when he proposed the vote of thanks to Professor Muir for his lecture on "Immunity;" and there is the melancholy interest attached to this, that on that evening Dr. Steven was seated alongside Mr. Henry E. Clark, whose death occurred also with startling suddenness about ten days later.

A. Y.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. S. FOWLER, M.D.,
Physician to the Royal Hospital for Sick Children.

The Functions of the Parathyroids.

In a former abstract in this *Journal* (July 1907), work on the parathyroids, particularly in reference to the relation of these glands to tetany, was reviewed. During the eighteen months which have elapsed a number of communications on the same lines have been published; these, on the whole, confirm and extend the earlier investigations, though it must be admitted that some observers have

failed to obtain definite results from the extirpation of the parathyroids, and dispute the whole theory raised on such experiments.

The arguments against the parathyroids having any such function as will hereinafter be referred to are clearly set forth in a recent paper by Forsyth.[1] His views will be discussed very briefly, not because they lack force, but because in this review it is proposed to deal mainly with the positive results which have been obtained, and with the implications these convey: after all, the opinions expressed by Forsyth are contrary to those of the great majority of experimenters. His criticisms are based (1) on the admitted technical difficulty of the operation of parathyroidectomy, and the impossibility of making sure that all parathyroid tissue, and nothing but parathyroid tissue, is removed; (2) on the inconsistent and contradictory nature of the symptoms produced (it is alleged) by the operation. Neither from the literature, nor from his own examination of the organs, can he discover any relation between lesions of the parathyroids and clinical symptoms. Approaching the study of the glands from the standpoint of comparative anatomy, he concludes that they are merely parts of the thyroid gland which have assumed functional activity, but have not formed vesicles; they may develop into thyroid tissue; intermediate stages occur; the secretion of colloid material is indistinguishable from thyroid colloid; they are "essentially thyroidal in nature, possessing no peculiar function, but engaged in the active secretion of the same substance as the thyroid gland."

The opinions of the generality of workers are voiced by MacCallum when he says, "The fact appears to be thoroughly well established in spite of the dissenting voices of a few English investigators that the parathyroid glands are organs of independent nature and not developed from the thyroid or convertible into thyroid tissue. The evidence against this is of so insignificant a character as compared with the overwhelming evidence in its favour that space need not be occupied here in discussing it." The work of Gley, Vassale, Generali, Horsley, Kocher, Erdheim and Pineles sufficiently proves that the destruction of all the parathyroid glands results in the death of the animal with symptoms of tetany, which is not in the least dependent on the destruction of the thyroid gland.

Halsted[2] records a long series of experiments on dogs on transplantation of the parathyroid glands. The object of the research was to settle what course a surgeon ought to pursue when he accidentally or of necessity removes or injures the parathyroids in operating for goitre. Halsted found that grafting only succeeded when an animal's own parathyroid was used (auto-transplantation); iso-transplantation (of a gland from another animal of the same species) always failed. Auto-transplantation, moreover, only succeeds when a deficiency of parathyroid tissue has been created by removal of at least half the

glands. Parathyroid tissue transplanted in excess of what the organism needs does not survive. Transplantation was performed into the thyroid or into the rectus abdominis in these experiments. Halsted found that total thyroid-parathyroidectomy caused death from tetany; total thyroid-parathyroidectomy, with auto-transplantation of parathyroids, caused myxœdema. The most striking experiments were conducted as follows:—Dog No. 7, left external parathyroid grafted behind right rectus abdominis. A fortnight later both thyroid lobes removed and circulation of any remaining parathyroid destroyed. No special symptoms. A fortnight later the grafted parathyroid was removed. Microscopic examination showed that it was normal parathyroid. Two days later the dog died of tetany. Halsted concludes that parathyroids injured during operation should be grafted into the thyroid.

MacCallum and Voigtlein [3] deal with the question of calcium metabolism in relation to the parathyroids and tetany. Tetany, they say, results when the parathyroids are excised in dogs, monkeys, rats, cats and goats. When tetany does not follow the operation it is due to a stray parathyroid (*e.g.* embedded in the thyroid) being left behind; apparently an extremely small remnant of the gland structure is enough to prevent symptoms. They admit, however, that certain inexplicable cases do occur in which there is no tetany, only apathy and death, after parathyroidectomy. Outspoken tetany does not always occur; the animals may live on the verge of tetany, with only occasional acute attacks. Complete recovery is rare after tetany has once developed. The symptoms of tetany can be abolished by subcutaneous or intravenous injections of parathyroid gland, or of a nucleo-proteid obtained from it by Beebe, who regards this as the active principle. Parathyroid given by the mouth has no effect. These results were obtained both in animals and in man; cases of tetany following operation for goitre were cured by parathyroid extract. In studying the calcium metabolism of parathyroidectomised animals, MacCallum and Voigtlein were influenced by the following considerations:—The tetany of infants is generally believed to be associated in some way with excess, or deficit of calcium. It is dependent to some extent on diet, being particularly common among artificially-fed children, especially those reared on cow's milk. Stoelzner tried to show that tetany was due to an excessive retention of calcium in the tissues—a sort of calcium poisoning, probably due to intestinal disturbance preventing a normal excretion of calcium by the bowel. (See an abstract of his paper by Thomson, *Scottish Medical and Surgical Journal*, November 1906.) The evidence in favour of Stoelzner's theory is not at all conclusive; it seems more likely that matters stand the other way about, and that tetany is associated with calcium starvation. Quest found that the brains of infants dying of tetany contained little

calcium. Sabbatani showed that when calcium chloride is applied to the cortex the irritability of the motor areas to electric stimulation is much reduced; sodium citrate, on the other hand, had just the opposite effect. Loeb found that the injection into the body of any salt liable to precipitate calcium caused twitchings of the muscles. Clinically, there is more evidence that calcium salts cure, than that they favour tetany. Moreover, we know that tetany is most likely to occur in rickets; it also occurs in osteo-malacia, and in pregnancy—all of them conditions associated with disturbance in the calcium metabolism, for in pregnancy there may well be an excessive drain on the calcium of the mother's tissues in connection with the development of the fœtal skeleton.

MacCallum and Voigtlein's experiments fall into two groups:—(1) Attempts to determine the action of minerals, especially calcium, in cases of outspoken tetany in parathyroidectomised animals; (2) study of the changes in metabolism during tetany, and in the chemical composition of the tissues in animals dying in that condition. In dogs, whether the calcium salt (lactate or acetate) was given subcutaneously, intravenously, or by the mouth, the symptoms of tetany rapidly disappeared. Animals apparently moribund were brought back to life in this way. In a patient of Musser's, suffering from post-operative tetany, large doses of calcium lactate cured the condition. Halsted, in his paper above referred to, gives ample confirmation of these results. In his hands calcium proved capable of keeping parathyroidectomised animals alive when they seemed on the point of succumbing to tetany, and tiding them over until such time as the grafted parathyroids began to function actively. Calcium was given in doses of 10 to 100 c.c. of 5 per cent. solution of lactate or acetate. Potassium and sodium salts had no such action; magnesium salts gave results which were inconclusive on account of the ataxic and anæsthetic effects of the magnesium ion.

The general results of the metabolism experiments were these:—During an attack of tetany the calcium content of the blood is lowered by half; the ammonium content is high. The brain is poor in calcium, and the excretion of calcium by the bowel and urine is increased. The bearing of these results is clear enough in certain classes of cases—*e.g.* in osteo-malacia, rickets, and pregnancy, in which decalcification occurs either from some unknown morbid cause, or from the drain on the maternal tissues; in gastric tetany it is not apparent. Two of the conclusions appended to the paper may be quoted. "6. In tetany there is apparently some disturbance of the composition of the circulating fluids ordinarily prevented by the secretion of the parathyroid, which disarranges the balance of the mineral constituents of the tissues. Possibly this consists in the appearance of an injurious substance of an acid nature, for such tetany may be relieved by extensive bleeding

with replacement of the blood by salt solution. No actual poisonous material has, however, been demonstrated by the transference of the blood of a tetanic animal to the veins of a normal one." "16. The *rôle* of the calcium salts in connection with tetany may be conceived of as follows:—These salts have a moderating influence upon the nerve cells. The parathyroid secretion in some way controls the calcium exchange in the body. It may possibly be that in the absence of the parathyroid secretion, substances arise which can combine with calcium, abstract it from the tissues, and cause its excretion, and that the parathyroid secretion prevents the appearance of such bodies. The mechanism of the parathyroid action is not determined, but the result—the impoverishment of the tissues with respect to calcium, and the consequent hyperexcitability of the nerve cells, and tetany—is proven. Only the restoration of calcium to the tissue can prevent this."

One cogent reason against the parathyroids belonging to the thyroid system is furnished by Estes and Cecil,[4] who, from careful analysis of large numbers of parathyroids of dogs, cows, horses, sheep and man, show that iodine is usually absent, and in the few cases in which it does occur, exists only in infinitesimal quantity.

The conditions of the parathyroids in children suffering from tetany has been studied by Yanase,[5] and he has detected a definite lesion, viz. hæmorrhage. His preliminary account of the normal anatomy of the glands in the child is as follows:—There are two parathyroids on each side, lying on the posterior surface of the lateral lobe of the thyroid. Histologically, the characteristic elements are the parathyroid cells (*Epithelzellen*), which have a transparent, non-staining protoplasm and a very sharply outlined nucleus, recalling the appearance of a vegetable cell. The adult type of cell—protoplasm staining deeply with eosin—does not appear until about the fifth year. The parathyroid cells in children contain a variable amount of glycogen; in tetany this is diminished. Aside from such lesions as waxy degeneration, miliary tuberculosis, &c., the most interesting and important pathological change is hæmorrhage, which is far more common in infancy than in adult life. Hæmorrhages apparently occur, as a rule, after birth (*cf.* ecchymoses which are found on the pleura and pericardium); they disappear gradually by the ordinary process of absorption, and have usually become completely removed by the end of the first year; (this is an important point in Yanase's argument). The oldest child in whom traces were found was five years. Occasionally fresh hæmorrhages occur from various causes after birth. In a series of fifty cases examined post-mortem, the conditions of the electrical reaction during life was known. (The diagnosis of latent tetany in infants rests, to a large extent, on the existence of increased galvanic excitability of the muscles). They fall into four groups—(1) normal reactions; (2) increased anodal excitability; (3) increased cathodal excitability;

(4) evident tetany. In group (1) there were 13 cases; all parathyroids normal. In group (2) there were 22 cases—9 under and 13 over one year. Hæmorrhages were found in all the cases under a year, and in three of the older children. In group (3) there were 13 cases with eight hæmorrhages—here, again, the negative results were in children over a year. In the two manifest cases of group (4) hæmorrhages were found. Yanase does not suggest that parathyroid hæmorrhage is the sole cause of tetany. It is merely a predisposing cause, the injury to the function of the glands preventing their neutralising the toxin producing the disease. Escherich[6] gives general support to Yanase's hypothesis; he reports unfavourably of the curative action of parathyroid extract.

Out of several other investigations on the same subject an observation of Erdheim[7] may be referred to. He describes a characteristic defect on the dentine of the teeth of parathyroidectomised rats. This seems to fall into line with the other work on the calcium metabolism. Leopold and Reuss[8] found that in young rats after parathyroidectomy, the calcium of the skeleton was notably deficient. In an interesting paper, which is not, however, suitable for abbreviation, Chvostek[9] tries to prove that myasthenia gravis is due to hyperactivity or to perverted activity of the parathyroids.

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[2] Halsted, *Jour. Exper. Med.*, 9th January 1909.
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[4] Estes and Cecil, *Johns Hopkins Hosp. Bull.*, September 1907.
[5] Yanase, *Wien. klin. Woch.*, 26th September 1907.
[6] Escherich, *Münch. med. Woch*, 15th October 1907.
[7] Erdheim, *Mittheil a. d. Grenzgebiete Med. u. Chir.*, 1906, 16.
[8] Leopold and Reuss *Wien. klin. Woch*, 28th August 1908.
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SURGERY.

By J. W. STRUTHERS, F.R.C.S.,
Assistant-Surgeon to The Royal Infirmary, Edinburgh.

A Human Experiment in Nerve Division.

It will be remembered that some years ago Head, Rivers, and Sherren propounded a new theory of the sensory mechanism in the peripheral nerves as the result of a prolonged and elaborate investigation of a number of cases of nerve division which had come under their observation. One of these cases was that of Head, who submitted himself as the subject of experimental division of certain cutaneous nerves in order to obtain, as far as possible, absolute proof of the truth of some

of the deductions made from the study of nerve lesions in hospital patients. The results of this experiment were of great importance and were published in part at the time. It is now more than five years since the nerves in Head's arm were divided, and as the results are now apparently complete, a very detailed account of the whole matter has just been published by Head and Rivers (*Brain*, pt. iii., 1908, pp. 324-449). Although doubtless familiar to neurologists, the import of their observations is perhaps not so widely appreciated by clinicians generally as it might be, and a short summary of their views may therefore not be out of place.

In the first place it may be recalled that the experiment carried out on Head consisted in the division of the left radial nerve immediately after its origin from the musculo-spiral, the excision of a small portion and the immediate suture of the cut ends with fine silk. The external cutaneous nerve was also divided where it pierces the deep fascia beside the cephalic vein and the ends immediately united, without excision of any of the nerve. The necessary wound, 6½ ins. long, healed by first intention and the case presented all the features of one in which a speedy restoration of the function of the divided nerves was to be expected.

Between April 1903 and December 1907, 167 days were devoted to investigating and recording the changes following the operation. The observations made on the sensibility of the parts affected were carried out with the greatest care. Most elaborate precautions were taken to exclude every source of fallacy, and many ingenious devices were employed in order that clear and unequivocal results might be obtained. Whether the interpretations put by Head and his collaborators on the phenomena observed are universally accepted or not, the most carping critic cannot but admit that the actual observations made were as complete, as carefully made and accurately recorded as they could possibly have been, and that the greatest credit is due to Head and his co-workers for the unique contribution they have made to the elucidation of a most difficult problem.

The specific object of the experiment was to provide an opportunity for studying the results of dividing purely cutaneous nerves in which both observers and observed were fully aware of the significance of the case and its bearing on the problem to be solved.

The progress of the case may be briefly summarised as follows:— After the operation the area supplied by the divided nerves became insensitive to light touch, to pin prick, to all forms of heat and cold, and two points of compasses simultaneously applied could not be appreciated. Sensibility to deep pressure and with it localisation of the spots pressed on were not interfered with. No signs of recovery appeared till 43 days after the operation. At this time sensibility to pin prick began to return in the proximal part of the affected area and

was present all over it 173 days after operation. Sensibility to cold returned gradually from 86 days after operation but was not completely restored till well over a year had elapsed. Stimulation of the hairs on the forearm with cotton-wool first produced a response 161 days after operation, but when the hairs were closely shaved touch with cotton-wool produced no response till one year after the nerves were divided. The greater part of the affected area had become sensitive to cutaneous tactile stimuli and to heat and cold 567 days after operation, but for some time after, the sensibility was lowered during cold weather, rising again during warm weather. At the time of writing in 1908, the authors record that complete recovery had taken place, except over a small area in the neighbourhood of the knuckles of the index and middle fingers, where the sensibility still remained in a defective state, "protopathic sensibility" only being present.

According to the authors' theory, the sensory mechanism in the peripheral nerves consists of three systems which they termed in their first paper (*Brain*, pt. ii., 1905) deep, protopathic and epicritic respectively.

Deep Sensibility

responds to deformation of structure produced by pressure or movement of muscles or joints, and produces pain if the stimulus is a vigorous one. The fibres subserving this form of sensation run mainly with the motor nerves and are not destroyed by division of all sensory nerves to the skin. In the case of Head it was found that although the affected area was totally insensitive to purely cutaneous stimuli, a pressure touch with the rounded end of a pencil or the pulp of a finger was appreciated at once and localised to within half an inch of the spot touched, while excessive pressure produced a dull, aching pain over the back of the hand. The statement is made "that all those stimuli commonly used by the clinician to test the presence of touch were appreciated and well localised." The significance of this in estimating the value of previous records of the results of nerve division and suture is obvious. It is quite clear that the greatest care must be taken to confine the stimulus to the skin in testing tactile sensibility, and that the rough methods ordinarily used must give in many instances very misleading results. Light touch with cotton-wool or with bristles or pulling a hair outwards, are suitable forms of stimulus. The experiment carried out by Head has been of great value in this connection, for it has proved that this deep sensibility is an important factor in the sum of afferent impulses that pass to the central nervous system. The experiment forms the clinical counterpart to Sherrington's demonstration of the presence of afferent fibres in muscles, etc.

Protopathic Sensibility.

According to the authors the skin is supplied by two anatomically distinct systems termed protopathic and epicritic. These regenerate

at different periods after nerve division. Protopathic sensibility responds to painful cutaneous stimuli such as the prick of a pin or to extremes of heat and cold. It regenerates before epicritic sensibility as is well shown in the history of Head's case. In their former paper (*loc. cit.*) the authors describe it as a great reflex system producing a rapid, widely diffused response unaccompanied by any definite appreciation of the locality of the spot stimulated. They state that the glans penis is a part normally supplied with protopathic sensibility and deep sensibility only, on which the characteristics of protopathic sensibility may be studied. While the affected area in Head's case was in a protopathic condition the diffuseness of the response to cutaneous stimuli was very marked. Not only did a sensation radiate widely from the spot stimulated but it was referred to distant parts. Perhaps the chief interest in Head's theory of protopathic sensibility is his suggestion that the internal organs are supplied with it and deep sensibility alone. Thus a sensation produced in a viscus will tend to show the same peculiarities as one evoked from an area known to be supplied by these systems only. If the stimulus consists of pressure or movements of muscles, the patient will recognise to some extent its true locality. When, however, the stimulus evokes pain, the sensation will tend to be referred to remote parts. This view differs from that advanced by Lennander, that the viscera supplied only by the sympathetic system are devoid of sensibility altogether. There are difficulties in the way of accepting either view, and now that abdominal operations are not infrequently done after merely anæsthetising the line of incision in the abdominal wall, opportunities should be taken to make and record observations which would throw light on the matter.

Epicritic Sensibility.

By this form of sensibility the power of cutaneous localisation, the discrimination of two points and the appreciation of finer grades of temperature are gained. Head believes that protopathic and epicritic stimuli are conducted along different nerve fibres in the cutaneous nerves, and that the mechanism associated with the former is not gradually educated into the higher and more delicate sense. Space will not allow of the recapitulation of the reasons advanced for this belief. Although not carrying absolute conviction, they appear fairly sound, and the theory may be taken as a working basis for the explanation of the sensory mechanism till disproved.

In conclusion, the results of the experiment may be said to be of special value to the clinician as a guide to prognosis in cases of nerve injury, as a model of the method which should be followed in investigating and recording cases of nerve division, and as suggesting the lines along which future investigation should specially be directed in confirming or altering the theories advanced.

OBSTETRICS AND GYNECOLOGY.

By J. W. BALLANTYNE, M.D., F.R.C.P.,

Physician and Honorary Secretary to the Royal Maternity and Simpson Memorial Hospital, Edinburgh; Lecturer on Midwifery and Gynecology, Surgeons' Hall, Edinburgh; &c.

Torsion of Parovarian Cysts.—Lawson Tait, in 1879, was the first to point out the frequency with which torsion of the pedicle of infra-ligamentary or parovarian cysts occur; and GUISEPPE FOSSATI has now (*Annali di Ostetricia e Ginecologia*, xxx. vol. ii. pp. 637-734, December 1908) drawn together into an article of nearly one hundred pages the knowledge which has been gradually accumulated respecting this complication of the growth of these broad ligament tumours. Beginning with Lawson Tait's case, reported in the *Lancet* in 1879, Fossati passes in brief review one hundred and three recorded instances, and then gives details of six cases which had been observed by himself. The first of these personal observations had a characteristic history: it was the case of a nulliparous woman, 35 years of age, menstruating regularly and in good health; for about a year she had noticed a swelling (about the size of an orange) in the lower part of the abdomen, which had caused her no trouble except a slight sense of weight. About a month before the patient came for advice she had had a sharp pain in the epigastric region, which had passed off with rest. On the day preceding her admission to the hospital she had been attacked by pains in the region occupied by the tumour, and these had rapidly increased in severity. On examination the urine was found to be normal, and the abdomen was regularly distended, as in a six months' pregnancy, with an elastic, fluctuating, tender and movable swelling lying in front of the uterus; the pulse was 90, and the temperature was slightly raised (but fell to normal). The diagnosis of an ovarian cyst with a twisted pedicle was made; but, taking into account the very evident and superficial fluctuation, the possibility of its being parovarian in nature was allowed for. On opening the abdomen Fossati found that it was a parovarian cyst with two twists on its pedicle, free from adhesions, and having markedly vascular walls; the cyst, along with the ovary of the same side (which was apoplectic) was removed, and the tube, which was œdematous, congested, and much increased in length, was taken away with the tumour and ovary. The writer adds to these six cases other eleven, in which there was a parovarian cyst, but without twisting of the pedicle; and he then proceeds to discuss the whole question of torsion as elucidated by these seventeen personal observations, and a review of the whole literature of the subject. The following are his conclusions:—Parovarian cysts frequently develop a pedicle, especially when they arise from the more external tubules of the parovarium; and this development is favoured by the absence of pre-existing inflammatory

states of the uterine annexa. It is not rare for such pedunculated tumours to twist their pedicles—in 27 per cent. of the cases collected or seen by the author. Torsion seems to affect either a right or a left-sided cyst, but it is more common in multiparæ than in primiparæ; pregnancy has a noteworthy influence in determining the twisting, either indirectly by relaxing the abdominal walls or directly by the physiological change in position of the uterus. The pedicle may show several twists, five are not uncommon, and the resulting lesions vary with the number of twists, their tightness, the length of the pedicle, and other factors. These lesions are found not only in the walls of the cyst, but also in the corresponding ovary and tube; they consist of œdema, intense congestion, diffuse hæmorrhage, more or less circumscribed hæmatomata, zones of necrosis, more or less extended loss of epithelium, and fatty degeneration. The cyst-contents may be clear or blood-stained fluid, or may contain clots or fibrinous masses. Concomitant ascites has rarely been noted. Pain is the predominant symptom, and the attacks may be separated by longer or shorter periods of respite from suffering; the temperature is rarely raised during the crisis. An exact diagnosis is difficult during a crisis; if, after the acute symptoms have passed, there is found in the region of the uterine annexa a rounded swelling, slightly tender, movable, fluctuating, and independent, there is a great probability that we have to do with a parovarian cyst with a twisted pedicle; but, of course, it may be a simple ovarian cyst or a hydrosalpinx which has likewise undergone torsion. Removal of the diseased structures by operation is always indicated; the best way is by median laparotomy; and the operative prognosis is nearly always quite favourable. Fossati's paper is accompanied by some good coloured sketches, and there is a copious bibliography.

Diagnosis of Antenatal Death.—It has on several occasions been thought that at last the obstetrician had discovered a certain symptom or sign of death of the fœtus in utero; but nearly always the diagnostic hopes thus raised have been almost immediately disappointed. The chemical tests of the urine, for instance, have not given us any such certain test. But Dr. Egidio Solda (*Annali di ostetricia e ginecologia*, xxx. vol. ii. pp. 463-498, November 1908) now brings forward Negri's test again, and claims that it can be elicited in one-third of the cases of antenatal death in which the macerative process is advanced. The sign consists in the feeling of rattling of the cranial bones on one another when firm abdominal palpation is carried out; it has been said that occasionally the sensation is accompanied by a sound; and the phenomenon has been called "*scroscio palpatorio*" or "rattling on palpation." The author has investigated 176 cases of fœtal death with maceration which occurred at the Obstetric Clinic of Venice between the years 1887 and 1908. The cause of death could be deter-

mined in 107 of these cases, and in 60 of these (56·07 per cent.) it was syphilis; other causes were infective diseases with high temperatures, albuminuria, eclampsia, endometritis, malaria, pulmonary phthisis, hydramnios, grave anæmia, etc. In 70 cases the maceration was found to be advanced, and in more than a third of them Negri's sign was found. The chief causes of failing to elicit the sign would seem to have been the engagement of the fœtal head in the maternal pelvis and obscurity of palpation from the presence of uterine contractions, etc. Exceptional causes of failure were hydramnios, œdema of the abdominal walls, and anencephaly of the fœtus. Full details are given of the seventy cases, and the writer draws the following conclusions:—that Negri's sign is a certain indication of the death of the fœtus and of its state of maceration; that it goes to show that the fœtus has been dead for at least eight days; that it is met with in one-third of the cases in which maceration is advanced; that it helps to make the diagnosis of the presentation of the fœtus more certain when other indications thereof are absent; and that it is rendered difficult chiefly by two things—engagement of the head in the pelvis, and difficulties in palpation.

Renal Decapsulation in Eclampsia.—E. Kehrer of Heidelberg has collected together (*Ztschr. f. gynäk. Urologie*, Bd. i. Heft 2, pp. 111-126, December 1908) the records of twenty-three cases of eclampsia in which Edebohls's operation of renal decapsulation was performed; eight of the cases proved fatal, or a mortality of 34·7 per cent., although in three of the fatal cases the death was due to complications (bronchopneumonia, bleeding from a gastric ulcer, and late infection of the wound). In most of the instances cited the operation was performed some hours or some days post-partum, but in two it was done during pregnancy. In the two last-named it was successful, although in one of them vaginal cæsarean section was also performed. Edebohls himself has done decapsulation in three cases (successful), and Wiemer also has operated thrice (one death on the thirteenth day from infection of the operation wound). Kehrer draws conclusions not altogether favourable to the operation. He thinks the principles on which it proceeds are incorrect; and he is still of opinion that in the management of eclampsia we have almost no other choice than therapeutic means of evacuating the toxic material and accouchement forcé. Decapsulation may, however, be recommended in grave cases of eclampsia, in which the renal element is markedly present, and in which, in spite of emptying the uterus, and in spite of employing all the other means of stimulating the excretory organs, the convulsions become stronger and the general condition worse. Under these circumstances, if Edebohls's operation is contemplated, it ought not to be delayed more than a few hours. As a result of the decapsulation, there is set up an increase in the flow of urine and in the excretion of urea, which occur usually at once, but

sometimes only after the lapse of some time; of course this means that the toxines of eclampsia will also be excreted more quickly. This increased diuresis must explain the result of Edebohls's operation; but it is a physiological, not an anatomical, explanation, for such changes as the development of anastomoses between the surface of the kidney and the fatty capsule have not been observed. An improvement in the state of the urine as regards albumen, blood, and tube-casts follows as a result of the diuresis; but a great deal of the effect will depend upon the state of the renal parenchyma at the time of the operation, a recent nephritis being much more distinctly benefited than a chronic one which has been re-excited by the pregnancy. The author emphasises the valuable information which may be obtained from a microscopic examination of small pieces of kidney-substance removed at the time of operation. In this way it may be decided whether both kidneys should be decapsulated in each case or only one. On the whole, decapsulation of the kidney would seem to give a further means of treating grave cases of eclampsia, and Kehrer hopes that it may cure some of the 20 per cent. of cases which are not improved by emptying the uterus, or which come on first after the birth of the child. But, of course, the procedure does not produce any effect upon the cases in which there are degenerative changes in organs other than the kidneys (*e.g.* the liver and the heart), or upon those of pulmonary œdema and hæmorrhages in the internal organs. The place in the therapeutics of eclampsia which renal decapsulation may yet occupy cannot be accurately defined till further evidence is accumulated.

Vaginal Cæsarean Section in Eclampsia.—Whilst some operators have been testing the value of renal decapsulation in eclampsia, others have been adding to the already long list of cases in which delivery has been rapidly effected by the vaginal cæsarean section. O. P. Humpstone (*Amer. Journ. Obstet.*, vol. lix. pp. 92-98, 1909) gives details of five cases in which this operative procedure was employed. In all the cases the patient was a primipara; in one the pregnancy was at term (labour pains not having come on), in one at the fifth month, in one at the sixth, in one at six and a half months, and in the remaining case at eight and a half months; and none of the patients were in labour. In all the cases the fœtus was delivered by version after the section had been performed; there was one maternal death (from aspiration-pneumonia). The writer quotes Bumm's recent statistics, in which forty consecutive cases of eclampsia have been dealt with by vaginal section with one death, and Veit's thirty-three cases with one death. The difficulties of the operation are slight, but two assistants are needed, and it is, therefore, rather a hospital procedure than one for private practice. It is a good plan to carry out a preliminary manual dilatation of the perineum and vagina, or to perform episiotomy or Schuchardt's perineo-vaginal incision. The longitudinal vaginal incision is to be

preferred to the transverse, as giving more room and avoiding hæmorrhage from tearing into the broad ligaments. The dangers are hæmorrhage, sepsis, and injury of the bladder; but even if sepsis occur, there is less danger than usual, for the peritoneum is not opened into. Drainage ought to be well maintained. There is little evidence of any trouble with subsequent labours. The vaginal section finds its special indication in grave cases of eclampsia early in pregnancy with an undilated cervix; it stands, therefore, at the other end of the list of cases in which renal decapsulation has been recommended.

Primary Abdominal Pregnancy.—It would seem as if the possibility of a primary abdominal pregnancy were soon to be established. Dr. Otto Grone, at any rate, has put on record a case in which there is strong presumption that the primary seat of implantation of the ovum was a spot on the pelvic peritoneum (*Zentr. f. Gynäk.*, xxxiii. p. 45, January 9, 1909). The patient was operated on for tubal pregnancy, but the annexa at the time of operation were found to be normal, and the bleeding proceeded from a spot the size of a shilling on the right side of the pelvis where the peritoneum from the pelvic wall passed off to form the broad ligament. In front of this spot was the round ligament, and behind it the cæcum. Two small bodies were found in the pouch of Douglas—one porous and the other solid; these showed the cellular constituents of the villi, but no trace of an embryo was discovered.

OPHTHALMOLOGY.

By ANGUS M'GILLIVRAY, C.M., M.D., F.R.S.E.,

Lecturer on Ophthalmology, St. Andrews University; Ophthalmic Surgeon, Dundee Royal Infirmary; Surgeon, Dundee Eye Institution, &c.

Affections of the Lachrymal Apparatus due to Delayed Development of the Lachrymo-Nasal Duct.

Immediately after birth, or as soon as the secretion of tears is fairly begun, an obstruction of the nasal duct may manifest itself. In such cases it is now generally regarded as due to delayed development of the nasal end of the lachrymal duct, unless evident disease within the nose or in the parts immediately adjoining the lachrymal passages offers a different explanation of the condition. Edward Jackson (*Ophthalmic Record*, July 1907), in dealing with this subject, states that in nineteen autopsies on new-born children De Vlacovich found four cases in which the orifice connecting the lachrymal canal with the nose had not yet been opened. Rochon-Duvigneaud among thirty new-born or still-born children found three in which, this orifice being still closed, the lachrymal duct was so distended as to displace the inferior turbinal.

In one of these cases one complete and seven partial septa obstructed the passage higher up.

The lachrymal drainage apparatus originates in a linear epithelial thickening, which becomes embedded in the mesoblast, forming a rod or cone of epithelium, which at one time becomes entirely separated from the epiblast (Monesi). This rod, budding at its upper end, develops into the canaliculi, which extend to connect with the epiblast of the lid margins. At the lower end of the passage the epithelial rod comes in contact with the mucous membrane lining the nasal cavity. In this epithelial rod a lumen is formed as early as the third month, probably by separation of the cells rather than by necrosis. This lumen is occupied by a gelatinous or pasty material in which the scanty cell elements appear to be leucocytes. Into the lumen of the tear-duct project valve-like folds or septa which subsequently atrophy, or, in exceptional circumstances, remain throughout life. It is possible at birth to have the tear passages thus obstructed at any point in their course, but the usual point of occlusion is at the opening into the nose.

The lachrymal secretion is not noticeable usually for several weeks after birth, and the canaliculi may not at this time be patent. As, however, no functional demand is made on the lachrymal passages, it is probable that in many cases of delayed opening of the duct into the nose no symptoms whatever are noticed, the opening occurring after birth but in time to meet any demands for it.

The cases in which symptoms arise, Jackson tells us, are those in which the canaliculi are open. Extraneous material reaching the retained contents of the lachrymal sac, infection occurs and the usual symptoms of dacryocystitis develop. The sac becomes distended, and there is regurgitation on pressure. Frequently around the sac symptoms of inflammation develop, accompanied frequently by lachrymal conjunctivitis.

In the absence of imperative symptoms we should adopt conservative measures, for the septum causing the obstruction may at any time disappear physiologically and effect a spontaneous cure. The inflammatory symptoms should in the meantime be controlled by palliative means, such as the use of protargol 2 per cent. or argyrol solution 5 per cent. at short intervals, together with the careful pressing out of the contents of the sac. Jackson has found that this method of treatment has given him generally complete success, although, in a few cases, it was necessary to continue the treatment for several months before a cure was obtained. This tallies with our own experience. In short we may say that the treatment of infantile tear-duct obstruction is very hopeful, and seldom is it necessary to have recourse to operative interference, palliative means being sufficient. But at any period later on in life the same hopeful prognosis cannot be given, for tear-duct

obstruction in the adult is always a source of great annoyance to both patient and surgeon. In our opinion it is seldom curable except after operative interference and sometimes not even then. Division of the canaliculi cannot be said to be scientific treatment, for it destroys permanently the physiological arrangement of the lachrymal conduction, and, although the eye ceases "to water," the condition cannot be said to be permanently cured.

In some cases radical treatment becomes necessary even in the infant. For example, the contents of the distended sac being always infected and frequently purulent, an abrasion of the cornea might very readily endanger the eye. The simplest operative method is the passage of a probe without dividing the canaliculi. Donald Gunn some years ago reported a series of cases in which lachrymal trouble with abscess formation occurred, and one in which simple mucocele existed. These were cured by the single passage of a probe. Forcible injection of fluid into the nose has been recommended by Jocqs with the intention of hastening the delayed opening of the duct into the nose. This method of treatment is perfectly harmless, provided there is no abrasion of the mucous lining of the duct. Weeks, while urging simple cleansing of the conjunctival sac and protection of the parts till Nature has had a fair opportunity of establishing a passage, holds that, if this has not occurred at the end of two months, slight slitting of the canaliculus and the passage of a small Bowman probe should be resorted to. Jackson would not limit the palliative treatment to two months or even six months, provided the symptoms are controlled by proper treatment, such as already referred to. We agree with Jackson that this is the best method of treating these cases, for so long as there are no symptoms of inflammation there is no necessity of having recourse to operative interference, except it be the simple one of passing a small probe, which does not interfere with the physiological condition of the canaliculus.

In cases of severe abscess formation radical treatment must be resorted to. Jackson recommends opening the abscess directly through the skin into the sac, passing the probe (5 or 6 Bowman) through this opening into and through the duct. If drainage be once established into the nose no lachrymal fistula will result and the canaliculi will be left absolutely normal. Should probing have to be resorted to from long continuance of the obstruction, or from some other cause, the dacryocystitis not being very severe, Jackson states that the punctum may be slit and the probe introduced through the canaliculus. The canaliculus, he emphasises, should not be slit to any extent, for slitting the punctum alone will permit the introduction of a probe sufficiently large (3 or 4 Bowman) for the desired purpose. The probing should be done thoroughly but not repeated, allowing the slit punctum to reunite, which leaves the lachrymal apparatus practically

normal. With this treatment we cordially agree, for the more one sees of lachrymal obstruction the less one probes. It is a mistake to carry out the repeated probing so common some fifteen years ago. The frequent passage of a probe is bound to injuriously affect the living membrane of the duct and produce cicatricial contraction of the lumen sooner or later. One sometimes sees excellent results after a single probing for mucocele in cases where the patient finds it impossible to attend the surgeon more than once.

In his most interesting and valuable paper Jackson concludes with emphasising the following points :—

Lachrymal obstruction in the infant is due to delayed development of the tear passages, and can be expected commonly to terminate in spontaneous, complete and permanent cure. The establishment of a normal condition is usually rather sudden. When spontaneous cure has not occurred and conditions arise that make operative interference imperative, such an operation is to be chosen that will leave the puncta and canaliculi in practically normal conditions.

The Value of Morphine Derivatives in Ocular Therapeutics.

Of the various derivatives of morphine, dionin is undoubtedly the most important and probably the only one which is of real value in ophthalmic practice. L. Webster Fox of Philadelphia (*Ophthalmic Review*, August 1908) states that the chemosis so characteristic of the local use of the drug is only produced by solutions above 2 per cent. in strength. He has found subconjunctival injections of 1 per cent. and 2 per cent. solutions to give better and quicker results than topical applications, this being especially true in interstitial keratitis. Fox does not find it of much value in old corneal opacities, retinal detachment, and in promoting absorption of soft lens matter after needling for "after cataract." He has found it of value in promoting absorption of recent corneal opacities and recent vitreous opacities. It is of great value when combined with atropine in the treatment of painful acute iritis and irido-cyclitis. In our opinion it is one of the most valuable therapeutic agents that has been placed at the disposal of the ophthalmic surgeon within recent years. We prefer to use it in 5 per cent. solution by simple installations three times daily into the lower conjunctival *cul-de-sac*. It is well to warn the patient of the intense chemosis likely to follow its installation, otherwise alarm may be produced and the applications discontinued. It is a remedy that has come to stay.

In the treatment of "Internal Affections of the Eye," Hansell (*Ophthalmology*, January 1909) writes on the *Value of Sweating*, especially in serious cases. Sweating is not resorted to, the author tells us, with sufficient frequency in œdemas, congestions and inflammations of the eye. The methods most used to cause diaphoresis are

by the administration of pilocarpin and by dry heat. Owing to the fact that pilocarpin occasionally produces considerable weakness, Hansell has abandoned its use, and now uses sweating by first covering the mattress of the bed on which the patient is to lie with a rubber sheet. The patient is then enveloped in three thick blankets. On each side, extending from the feet to the shoulders, and as close to the skin as the heat will permit, are placed receptacles filled with hot water. The patient is then given a cup of hot fluid, preferably tea. The sweating should begin very quickly, and should continue, provided the hot-water applications are kept up. If a glass of iced water is given half an hour after the sweating has commenced the sweat glands are stimulated to increase their work. All during the sweating process the head should be either wrapped with a wet towel or an ice cap should be applied. Hansell makes the outside limit of this sweating process an hour and a half—the duration of the sweating could be limited if at any time there was faintness or prostration. After the sweating the body should be dried and rubbed with alcohol, and the patient removed to a dry, warmed bed and allowed to remain there for several hours. The author recommends that this sweating process should be accomplished in the afternoon, the patient remaining in bed till the following morning. The number and frequency of the sweatings depend on the severity and chronicity of the disease, and on the physical condition of the patient. The reaction of the patient to the treatment and the effect on the eye inflammation for which it is instituted will determine the frequency of the sweatings and the length of time each should be allowed to continue. At the conclusion of the sweat bath the patient's temperature may have risen to 102° or 103° F., and the pulse is accelerated, but in healthy reaction the temperature should have returned to normal two or three hours later. If the reaction is such as to produce a subnormal temperature, the duration of the sweat should be shortened and should perhaps be preceded by the hypodermic administration of strychnine or other stimulant. If the temperature remains high longer than two or three hours the sweat baths should not be continued.

The advantages of these sweatings, the author states, seem to be due to the stimulation and increased activity of the lymphatic system, and this absorbent activity of the lymph, and possibly blood-vessel systems, tends to clear up or relieve exudates and inflammations of the eye.

The special indications for the use of the sweatings are inflammations of the sclero-cornea, of the uveal coat, acute and chronic, of the choroid, retina and optic nerve. He has never seen it do any harm. It is of the greatest value in chronic inflammations associated with exudates into the different parts of the eye.

Such treatment does not preclude the coincident administration of salicylates when rheumatism is the cause of the eye trouble or of mercury or the iodides when syphilis is the cause.

The Harmful Effects of Ultra-Violet Rays on the Human Eye.

Investigations carried out by Schanz and Stockhausen show that "electric ophthalmia" is due to ultra-violet rays. The same disease, though in less characteristic form, is produced also by many other illuminants containing a large percentage of ultra-violet rays. Snow blindness is similar in its symptoms to electric ophthalmia, and is likewise produced by the ultra-violet rays contained in the reflected sunlight. That the action of the ultra-violet rays, so far from being confined to the external eye, also affects its deeper parts, is evidenced by the intense fluorescence of the lens which they are able to produce. As a slight turbidness is produced in the lens by an intense lighting with ultra-violet rays, it may be said that the cataract of old people is possibly due to a progressive alteration of the lens. The spectrum of crude oil lamps and candles hardly exceeds the region of visible rays. The ultra-violet rays, however, extend as soon as a chimney is added, and an even more extensive spectrum is produced by using an incandescent mantle; but the longest ultra-violet spectra are found in electric illuminants. In all electric lamps fitted with a glass cover of any kind the short wave lengths are absorbed by the glass. Protective spectacles afford no protection against ultra-violet rays, and weaken the whole spectrum, for which reason they are not suitable for practical purposes. The authors (*Scientific American*, 24th October 1908) have undertaken the production of protective glass, which is now brought on the market under the name of "euphos glass." This glass, which is of light greenish yellow hue, owes its remarkable power of absorbing ultra-violet rays to its special composition rather than to its colour. The composition can be adapted to each kind of lamp. With a very slight loss of light (3 to 5 per cent.) this glass screens off entirely any ultra-violet rays. Special experiments made on animals show that it really affords an efficient protection to the eye.

PATHOLOGY.

By THEODORE SHENNAN, M.D., F.R.C.S.,
Pathologist, Royal Infirmary, Edinburgh.

Tuberculosis.

Of recent years much interest has been shown in the conclusions arrived at by Calmette[1] and Guerin, who believe that in pulmonary tuberculosis infection takes place most commonly by way of the alimentary tract. In his Cavendish Lecture, Whitla[2] strongly supported these opinions and also brought fresh evidence from feeding experiments conducted for him by Symmers. More recent German

investigators deny Calmette's facts, and state that both his technique and his conclusions are faulty. Reichenbach, Ballin, Heymann, Oettinger and others,[3] after very careful experimental investigations, excluding so far as possible all sources of error, conclude that laboratory animals are infected much more easily, and by infinitely smaller doses, by inhalation than by feeding. This confirms the work of other observers. They show that tubercle bacilli when inhaled can penetrate to the peripheral parts of the lungs in an hour. They insist that bovine bacilli never produce pulmonary tuberculosis and that primary intestinal tuberculosis is a rarity.

Fibiger of Copenhagen[4] comes to conclusions directly opposed to these statements. Collating the results of the German Imperial Board of Health, the British Royal Commission, and those of Jensen and himself, he, in the first place, concludes that about one-half to one-third of all cases of primary intestinal tuberculosis are due to bovine infection. He then shows, from the statistics of Wagener of Kiel, Edens of Berlin, Ipsen and himself of Copenhagen, that primary intestinal tuberculosis has been found in about 15 per cent. of all children, from 1 to 15 years of age, coming to post-mortem examination. On Fibiger's assumption that one-half to one-third of all cases of primary intestinal tuberculosis are of bovine origin, this would mean that 5 per cent. of all children under 15 years of age, coming to post-mortem, are the subjects of primary intestinal tuberculosis due to infection from a bovine source.

Fibiger also refers to similar results reported by Heller and Wagener in Kiel, Nebelthau in Halle, Lubarsch in Posen and to the investigations of Fischer and Brühning. He notes that even in Berlin von Hansemann found 23 cases of primary intestinal tuberculosis in 7 years, and that although Benda in 1903 stated that he had found only two or three cases, later he admitted that the frequency of the lesion was much greater than was originally supposed. It is also interesting to note that while Baginsky in 1901 did not observe a single case of primary intestinal tuberculosis, he found in the following year 6 cases out of 144 tuberculous children, and in 1905 he found 30 cases out of 389 tuberculous children.

Bonome,[5] out of 4224 autopsies, found 769 cases of tuberculosis, of which 126 were examples of primary tuberculosis of the intestines. The mesenteric glands were invariably affected in addition. In childhood, the percentage of primary tuberculosis of the intestines, as compared with tuberculosis in general, was 23·84, in adults 16·03, and in the aged 6·25 per cent.

In discussing a paper read by the present writer at the Washington Congress,[6] in which he stated that in 20·8 per cent. of his cases of tuberculosis, examined post-mortem, ulceration of the intestines occurred without any apparent pre-existing excavation of the lung,

Bovaird of New York said that in view of the low percentage of abdominal tuberculosis encountered in the hospitals of New York, he had experienced some difficulty in accepting those statistics emanating from British sources, which showed a relatively high percentage of cases of abdominal tuberculosis. He now admitted that it was evident, from the data accumulated by British observers, that this form of tuberculosis was in reality a severe scourge of infant life in Great Britain.

At the Washington Congress, Warthin[7] contributed an important paper on the "Placental Transmission of Tuberculosis." This was clearly demonstrated by means of micro-photographs. Pregnancy in a tuberculous woman favours the entrance of tubercle bacilli into the blood stream, whence they pass into the placental sinuses. The placenta is not a perfect filter for bacteria. It has no special immunity against the tubercle bacillus. Congenital tuberculosis resulting from placental transmission is more common than is generally supposed.

Mosher[8] of Boston, in the course of a paper on "Tuberculosis of the Nose, Mouth, and Pharynx," made the following observations:—"The pharyngeal tonsil is infected from the air current, the faucial tonsil from the food. Tonsils are most often infected in childhood during the time when the epithelium lining the crypts is spread apart and thinned by the passage of lymphocytes through it. The overwhelming majority of enlarged cervical glands are tuberculous and are infected by way of the tonsils." He is of opinion that cervical gland tuberculosis seldom gives rise to tuberculosis of the apices of the pleuræ or lungs. This is a point upon which many will disagree with Mosher.

At the same Congress, Altschul[9] of Prague gave a very suggestive communication on Tuberculous Peritonitis. He rightly considers that the intestine and the female genitalia cannot be regarded as the only sources of origin of tuberculous peritonitis, as there are many cases without any intestinal involvement. The bronchial lymph-glands naturally suggest themselves as a source of the infection, which may spread by one of two paths—either by the blood-vessels or by the lymphatics. He concludes that infection travels by way of the lymphatics, and suggests the following explanation:—"In tuberculosis of the peribronchial glands the healing process may begin in the proximal or in the distal portion (that is, relative to the thoracic duct). In the spread of infection the manner in which healing takes place is of some importance. If recovery begins in the distal portion of the gland the bacilli can escape only into the thoracic duct, whence they pass into the pulmonary circulation, in which they are arrested and set up tuberculosis of the lungs. If healing begins in the proximal portion, access to the circulation is barred and bacilli are carried in a retrograde direction through the lymphatics perforating the diaphragm, to the peritoneum. If several bronchial glands are affected, it is of course

possible that healing may begin in the proximal part of some and in the distal part of others, which would explain cases in which a severe pulmonary tuberculosis is associated with tuberculous peritonitis, both the processes being secondary to the disease of the bronchial glands."

In an interesting Festnummer of the *Wiener klinischer Wochenschrift*, published on the occasion of the Sixth International Tuberculosis Conference in Vienna, in 1907, Professor Anton Weichselbaum [10] contributed an interesting summary of the opinions held at that time as to the channels by which tuberculous infection occurs in man. He stated that, so far as we could judge, infection by way of the mouth, nose and pharynx, stomach and intestines, is far more frequent, particularly during early life, than has been generally supposed. This is supported by experimental work conducted by Bartel,[11] and others of his pupils.

The behaviour of tubercle bacilli which have entered through the natural channels indicates a protective action on the part of the cells of the organs, especially of those containing lymphocytes, against this infection. Bartel [12] showed that tubercle bacilli may be rendered a-virulent by placing them within lymphatic glands or other organs rich in lymphocytes, and keeping them for some time in the incubator at a temperature of 38° C. Noguchi,[13] from a long series of experiments, suggests that this action is due to the formation of soaps—lipoids—during autolysis of these organs. In a later paper Bartel,[14] as a result of numerous experiments carried out in conjunction with Neumann, concludes that "we must accept it as demonstrated that it is possible to produce a definite effect upon tubercle bacilli in the tissues of organs, especially of a lymphocytic nature, from which a specific mode of immunisation may yet originate."

Fibiger and Jensen [15] give the results of an investigation of a series of tubercle bacilli from man and from cattle. Summing up the results they cannot admit any sharp distinction between the two ordinary well-known types, though it is true that the majority of cultures isolated from cattle possess the qualities described as peculiar to "typus bovinus," and the majority of cultures isolated from human sputum correspond to "typus humanus." S. Arloing of Lyons [16] is also a staunch adherent of the doctrine of the essential unity of tubercle bacilli. In his paper on "The Variations of the Tubercle Bacillus," he describes the cultural methods by which he has modified various bovine and human bacilli in virulence until it came to resemble that characteristic of the avian bacillus.

Irimescu [17] continues his investigations showing that in tuberculosis of man and animals different para-tuberculins produce almost the same reactions as when one uses true tuberculin. He has recently tested them by Calmette's (Wolff-Eisner's) ophthalmo-reaction. Experiments with the Timothy grass bacillus, or rather with its para-tuberculin,

showed that out of 45 tuberculous patients, 44 reacted to a 1 per cent. solution, while the 45th reacted to a 2 per cent. solution. Almost all these patients had received, 2 months earlier, an instillation of tuberculin, and the eye which had reacted to tuberculin, although it had become quite normal again, gave a much stronger reaction with para-tuberculin than the control eye. The author states that this is further proof of the close relationship between tuberculin and para-tuberculins, the latter, however, being much weaker substances.

Klimmer [18] weakened the virulence of human tubercle bacilli by passing them through the salamander and also by careful prolonged heating to 52° to 53° C. Though a-virulent, they were still useful for immunisation. Inoculation of cattle with this material protected them against a severe artificial infection with bovine bacilli. Cultures of bovine bacilli weakened after the same fashion also gave protection, but not so great as that produced by inoculation of weakened tubercle bacilli from man.

Dawson [19] states that bovine tuberculosis has become more prevalent in the United States. In proportion as it prevails, it becomes more and more a menace to mankind. Similarly, tuberculosis in swine is on the increase, swine being commonly fed on dairy refuse, and even on unmarketable milk from cattle which are very evidently tuberculous. It is also common in swine which feed after dairy cattle in the fields, and in those which have access to manure-heaps; infection in these instances being carried by the fæces. He states that tubercle bacilli may remain alive and virulent in milk and butter for several months.

Rosenau [20] finds that the thermal death-point of the tubercle bacillus is well established. Exposure to 60° C. for 20 minutes, or less, is sufficient to kill it as a general rule. Theobald Smith found that the bacilli in *suspension* in milk are destroyed by exposure to 60° C. for 15 to 20 minutes, but that in the pellicle, which forms on the surface during this heating, living bacilli may be found even after 60 minutes.

De Jong [21] of Leiden comes to somewhat different conclusions. He finds that not only tubercle bacilli from cattle, but also those from horses, goats, sheep, swine and cats as well as those from man, can withstand Pasteurising at 71° to 72° C. for half an hour, the milk having taken a similar length of time to reach that temperature.

It may be granted, however, that even though some bacilli in milk or other food are not killed by exposure to a temperature of 65° to 75° C. their vitality is probably so reduced that the individual ingesting them is able to destroy them.

Weinzirl [22] discusses the action of diffuse light on the bacillus of tuberculosis by direct exposure, *i.e.* without the intervention of media, &c., which absorb the light. He shows that non-sporebearing bacteria,

including the tubercle bacillus, are killed by direct sunlight in a remarkably short time, generally between 2 and 10 minutes. It appeared desirable to test likewise the action of diffuse light, under similar conditions, upon bacteria and especially upon the tubercle bacillus. The results of this investigation indicated that the tubercle bacillus is always killed by diffuse sunlight within a week and even sometimes within 24 hours; controls grew for a longer time, but never after 10 days. It was thought that desiccation might be the most serious disturbing factor, and hence other controls were placed in moist chambers. Almost invariably these controls were killed in a shorter time than the exposed cultures. We may note in connection with Weinzirl's work that it has been stated that light has no effect upon bacteria in a vacuum. Jordan[23] thinks that it may be inferred that the changes which are brought about by light under ordinary conditions are primarily oxidation processes of a kind incompatible with life. Moreover, all spores, perhaps because of the oily substance they contain, are specially sensitive to light. Hence the importance of not only admitting plenty of light, but plenty of fresh air to occupied apartments.

In a previous digest[24] the modern methods employed in the diagnosis of tuberculosis have been considered and the relative value of the cutaneous and the ophthalmo-reactions were discussed. Time has only served to accentuate the value of these reactions, and some ingenious modifications, particularly of the former method, have been proposed. One of these is of the nature of a differential cutaneous reaction and was proposed by Detre of Buda-Pesth.[27] An actual test of the method was conducted in one of the Washington hospitals during the recent Tuberculosis Congress. A number of children in hospital were inoculated by Detre's method, and the demonstration received a great deal of attention from members of the Congress.

The method is merely an adaptation of that so fully and perfectly worked out by von Pirquet,[28] and consists in the application to the skin of three different substances—(*a*) concentrated old tuberculin, (*b*) filtrate of a culture of human tubercle bacilli, and (*c*) filtrate of a bovine culture. The resulting reaction is claimed to differentiate between human and bovine infection. The initial dose is 0·1 cm. of a ten-millionth dilution of the filtrate in 1 per cent. sodium chloride to which 0·5 per cent. of carbolic acid is added. If no reaction occurs a larger dose is given after a few days. Detre found that in 90 per cent. of his cases of pulmonary tuberculosis the "human reaction" preponderated, whereas in visceral and surgical cases (in adults) the "bovine reaction" may be demonstrated in one-third to one-half of the cases. Further, he also states that the nature of the cutaneous reaction indicates the special tuberculin to be employed in the treatment of individual cases, and claims that the technique is

simpler, and the results more easily perceived and more certain than those obtained by the opsonic methods. One may note that Dinwiddie,[25] speaking at the same Congress, stated that his experience was that material, from forms of tuberculosis usually referred to as surgical, was no more virulent for bovines than the sputum of consumptives; Eastwood,[26] moreover, showed that no conclusion can safely be drawn as to the nature and type of the infecting bacillus from the situation of the lesions produced by it.

Landouzy [29] read a paper at the Washington Congress on "Typho-bacillosis"—a type of acute tuberculosis which he described so far back as 1883. It is characterised by a typhoid state with continued fever, enlargement of the spleen, and with no sign of visceral localisation. The temperature curve shows a greater oscillation than in typhoid fever, and a lack of correspondence between pulse-rate and temperature —the pulse being relatively quicker than in typhoid. If death occurs after from 2 to 4 weeks, no local signs of tuberculosis are discoverable in the viscera. Occasionally a few minute granulations are found. Usually the patients recover without return to robust health, and in a few weeks or months localising signs of tuberculosis appear either suddenly or insidiously and the disease advances rapidly. The lungs or pleura are usually affected in the adult, and the mesenteric glands in children.

There appears to be a distinct difficulty in distinguishing this condition from typhoid fever. The latter may be excluded by the results of cultivation from the blood [30] or dejecta, or by the agglutinating reaction (see this *Journal*, December 1908). For the diagnosis of "typho-bacillosis" Landouzy recommends inoculation of the blood into a guinea-pig, but, in addition, von Pirquet's Cutaneous Reaction [28] may be employed.

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MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

THE fifth ordinary meeting was held on 3rd February, Dr. James Ritchie, President, in the chair.

A discussion upon "The Treatment of Varicose Veins in the Lower Extremities" was opened by Mr. Cotterill (see p. 213).

Dr. George Hunter referred to the importance of the condition of the blood in regard to thrombosis. Improvement of the quality of the blood was an important matter in treating thrombosis.

Mr. Dowden said he had found the crape bandage of great value as a palliative. He referred to the upward spread of thrombosis, and said he thought that an aseptic ligature higher up was beneficial in such cases.

Mr. Scot Skirving, C.M.G., said that Mr. Cotterill had stated the case for operation very fairly. He referred to C. H. Mayo's operation, and said that, as many veins were brittle as well as dilated this method must have a limited use. He alluded to the advantage of the bandage over the stocking. In excision of veins the prevention of sepsis was even more important than usual. Recurrence was said to be of frequent occurrence, yet he thought that Mr. Cotterill's operation had been most successful.

Mr. Struthers said he had been much struck with the fact that large numbers of cases had no symptoms whatever, and he had seen a large

number of cases after operation almost as bad as could be imagined. He asked whether varicose ulcers were cured by operation *per se* or by the rest in bed?

Dr. Norman Walker said he had seen many cases of varicose dermatitis and recurrent ulceration. Did operation permanently cure varicose ulcer?

Mr. George Chiene said that certain patients could not enter the services and others could not carry on their work because of varix. Operation was called for in these cases. He had operated on 20 patients by Mayo's method. The method was good if suitable cases were chosen. Cases of marked thrombosis and of friability of the veins should be excluded. He had ascertained the after results in 30 out of 40 cases operated upon, and the results of Mayo's operation were better than the others.

The President said that many cases occurred without symptoms, but these cases tended to become worse without treatment. He had given up Martin's bandage, and usually employed the crape bandage. In slight cases he recommended a very tightly-woven stocking with the foot cut off. Operation should be recommended in the case of patients going abroad, entering the services, or unable to attend to work. He had seen many cases of complete cure after operation. For varicose veins with phlebitis he had obtained benefit from the application of 10 per cent. ichthyol in glycerine.

Mr. Cotterill in reply said he did not employ Mayo's method, because he had seen trouble arise from hæmatoma from collateral branches. Before operation he painted the skin with an iodine preparation in order to sterilise it. Operation, if radical, usually improved ulcer. He denied that varicosity always tended to get worse, and in many cases it improved, especially after middle life. In cases of phlebitis he kept patients in bed for at least three weeks.

Drs. G. A. Gibson and W. T. Ritchie communicated a paper on a case of Stokes-Adam's disease, which will appear next month.

Edinburgh Obstetrical Society.

THE fourth meeting of the session was held at 5 St. Andrew Square on the evening of Wednesday, 10th February, Professor Stephenson, President, in the chair. Dr. Freeland Barbour showed—(*a*) vesical calculus round a silk suture removed from a patient on whom abdominal hysterectomy had been performed, in course of which the bladder had been torn and sutured; (*b*) Lutein cyst. Dr. Young exhibited for Dr. Haig Ferguson a vesical calculus round a silk suture. In this case, also, hysterectomy had been performed, but there was no injury to the bladder at the operation. Mr. E. Scott Carmichael

showed a uterus removed by Mayo's method for complete prolapse. Dr. Berry Hart gave a demonstration, with limelight illustrations, of the Physiological Descent of the Testes in the Human Species. This he considered to be approximately as follows. When the Wolffian bodies disappear in part, the testes sink, and, guided by the gubernaculum, or rudder, lie opposite, or nearly opposite, the internal opening of the inguinal canal. The gubernaculum at this stage is the inguinal fold, a V-shaped fold of peritoneum with unstriped muscle in between the peritoneal laminæ. Above, it is attached to the lower and outer aspect of the Wolffian duct; and from a point in the duct on the other side, opposite to this origin, the caudal ligament of the testis passes up to the epididymis. This can be well seen in pig-embryos. The gubernaculum can therefore not draw down the testis, because (1) it is not attached directly or even indirectly to the testis, and (2) it is attached all along one side to the connective tissue, and is not a structure with a free periphery. While the testis are still in the abdomen, the gubernaculum, with the internal oblique and transversales muscles and the peritoneum—forming the inguinal wedge—advance through the abdominal wall first outside and then in front of the rectus. In this way the inguinal canal is formed, or rather is preformed. The passage of the inguinal wedge is determined, so far as one can deduce this anatomically, by a local development of lymphatic sinuses. Dr. Florence Fabin has shown that in pig-embryo—and he had found the same in the kangaroo—the lymphatic sinuses bud out from the groin veins, and, uniting with other areas of lymph vessels, complete the lymph vessels for the abdominal boundaries. It is to the outside of and through this lymphatic area that the gubernaculum passes.

The next stage is that this preformed inguinal canal grows up around the testis, thus enclosing it, and finally the testes pass into the scrotum, which is at first solid but becomes pre-canalised by the advancing inguinal wedge as the inguinal canal has been. The testis passes in by a series of accommodation changes, perhaps aided, as Frankl states, by the ultimate shrinkage of the gubernaculum.

It was finally pointed out that the lower insertion of the gubernaculum is in all mammals into a mammary area, and whatever the reason of the ultimate passage of the testes into the scrotum, they passed into a mammary area.

The various stages of the formation of inguinal canal and scrotum were demonstrated on serial sections of marsupial and human embryos, the latter being chiefly from the papers of Weil, Frankl and Bramann.

The descent of the ovaries was shown to be less marked, and this, in the main, depended on the round ligament representing the gubernaculum, its analogue being only equivalent to it at the stage when the testes were in the abdomen, *i.e.* undescended. The ovarian

ligament is represented in the male by the caudal ligament of the testis.

Dr. Berry Hart then gave a demonstration on Mendelism in the Differentiation of the Human Genital Tract and of Sex.

After giving a brief account of the elements of Mendelism, Dr. Hart went on to attempt to prove that sex has differentiated by two of Mendel's laws—Gametic Segregation and Dominance. The clue to this was to be found in the constitution of the genital tract, inasmuch as each had in it a potent segment characteristic of its own sex (ovary, uterus, vagina, in the female; testis and phallus in the male); and a non-potent (epoophoron in the female; and appendix testis, and prostatic utricle in the male), characteristic of the opposite sex. This was regarded as showing that in the formation of the tract the law of Dominance of Mendel had been followed.

The human fertilised ovum (zygote) is thus considered an impure dominant in Mendel's sense.

The origin of this must be sought in the union of gametes (spermatozoa and ova), each necessarily of two kinds, viz. a dominant and recessive ovum and a dominant and recessive spermatozoon.

The genital tract has its structure made up of unit-determinates (*i.e.* results), and these are represented in the zygote by causal "determinants." The zygote has thus "determinants" exactly causal to the "determinates" of the genital tract.

The determinates are "potent" and "non-potent," or better, "Dominant" and "Recessive," in Mendelian phrase. When the "determinates" in the genital tract can be thus analysed, we can reason back to the determinants in the gametes, producing a zygote, and allot to each dominant and recessive gamete, dominant and recessive "determinants," by using the law of Dominance between.

The determinates in the ovarian and testicular dermoids were then analysed according to the researches of Wilms and Okhubo, and reasons given for considering such, which never have dominant genital organs represented in them, as being derived from recessive ova or spermatozoa, as the case may be, which have retained their power of developing like a zygote. The primitive germ-cells from which the ova and spermatozoa arise are considered to be really zygotes, which lose their power of developing as such after undergoing spermatogenesis and oogenesis respectively to form the gametes. Fertilisation is considered to be a "crossing" or variation of gametes, *i.e.* of a dominant ovum with a recessive spermatozoon, giving a female zygote; or of a dominant spermatozoon and recessive ovum to form a male zygote. Sex is thus considered as being determined at fertilisation, and not afterwards.

The term "Holophyte" is used to designate an "adult" form.

Glasgow Medico-Chirurgical Society.

FRIDAY, 22nd January 1909, Dr. Walker Downie in the chair.

Professor Robert Muir delivered an address on "A Consideration of Some of the more Recent Work on Immunity, especially in Relation to Diagnosis and Treatment."

Friday, 5th February 1909, Dr. Walker Downie in the chair.

Dr. James Maclean read short notes of a prolonged and severe case of cerebro-spinal meningitis which recovered, and showed the patient. The disease extended over eleven months, during the greater part of which the patient, a little girl, was acutely ill with all the severer manifestations of the disease. Interesting features were, frequent subsidence into the cataleptic state, abnormal growth of hair on the cheeks, and the discharge of a serous fluid from the region between occiput and neck. Throughout ample nourishment was administered, either by the mouth or by tube, and at one stage only nutrient enemata could be given. No sequelæ of any kind remained, the child being able to see, hear, speak, and walk normally. The treatment was chiefly symptomatic. Flexner's serum was tried, but without evidence of any noteworthy effect.

Mr. Henry Rutherford showed :—(*a*) A girl aged 8 years, the subject of osseous ankylosis of the jaw on one side, following otitis on the same side. Excision of the condyle and neck resulted in a useful jaw. (*b*) A specimen of rupture of the colon by bursting (éclatment), the patient having suffered from a severe crush. (*c*) Discussed some recent cases of contusion injuries of the abdomen, most of which had resulted in ruptured intestine (seven in all). Among the injuries causing rupture were, knock with another man's knee, fall on a wire rope, crush with a cage, knock with solid body on the abdomen and being run over with a cab. The importance of immediate operation was pressed. In one case no lesion of the bowel was observed at operation, but a large quantity of fluid blood was found in the peritoneal cavity. Ten days later peritonitis set in, and at the second operation it was found that a bruised part of the bowel had perforated. The patient did well. Only two died.

Dr. Kerr Love described a case of perisinus abscess with mural thrombus in the sinus, basal meningitis, and tuberculous tumours of the pons, cerebellum, and both sides of the cerebrum. A facial paralysis which could not be related to a peripheral lesion was found post-mortem to be due to a tumour in the pons. Dr. Kennedy showed the specimens from the case.

Dr. Syme showed an old woman with a fungating epithelioma of the auricle the size and appearance of a strawberry, of three months' duration, but on the site of a wart or mole which had been present for some considerable time.

Dr. Rutherford showed a gall stone of quite moderate size which had become impacted in the bowel and gave rise to symptoms of acute intestinal obstruction.

Forfarshire Medical Association.

A MEETING of the Society was held in the Royal Infirmary, Montrose, on Thursday, 21st January, at 5.15 P.M., Dr. Key in the chair.

Dr. Middleton Connon read a paper on "Cases in Recent Practice," with an exhibition of patients and pathological specimens.

Dr. Grant read notes on a complicated case simulating appendicitis. The man, a farm servant, was first seen on 1st January, when he was found to be suffering from severe pain in the region of the appendix. He had been troubled for several months with recurrent attacks of a similar nature, but never so severe, nor of long duration. The temperature was 103°, and pulse 120, and besides the pain and tenderness over the appendix there were distinct signs of pleurisy at the base of the right lung. He was removed to hospital, where next day, after a restless night, he was again examined. The pain was very much worse, his face was pinched and drawn, and pulse very weak. Though now there were distinct signs of pneumonia, the general condition seemed to point to rupture of the appendix. The abdomen was opened, and the appendix was found to be greatly swollen and inflamed, and round about it four large apparently tubercular glands. The appendix was removed and the wound closed in the usual way. He made a rapid recovery, the pneumonia and pleurisy subsiding in a fortnight. There was a copious expectoration during the illness, but no tubercle bacilli were found in the sputum.

Dr. Hoile read notes on the treatment of tuberculous affections with X-rays. He referred first to two cases of tuberculous glands. The first in a young woman who for eighteen months had a swelling the size of a pigeon egg on the left side of the neck. She was given exposures for three minutes—thrice weekly for three months—at six inches distance. This resulted in a complete disappearance of the swelling. The second case a girl, aged five years, with a glandular abscess in the episternal notch and a gland on the right side of neck. Similar exposures had an equally beneficial result. A case of tubercular dactylitis in a child aged three years, where one finger had previously been amputated and then had two fingers of each hand affected, the bones of which had been scraped, was given exposures for three minutes, thrice weekly for three months. Now, eight months after treatment, was in good health, the wound all healed, and had quite free and useful movements of the fingers. An X-ray photograph of the condition was exhibited.

Dr. Mearns Milne read notes on a case of ovarian tumour. The

patient, a married woman fifty years of age, had no previous illness. She had seven of a family, her menstrual history was irregular. When first seen in April 1908 was entering on the menopause. Her complaint was increasing weakness with swelling of the abdomen, and passing at times large quantities of urine, and a subsequent lessening of the swelling, which would last for a few days and then the swelling returned. On examination the only abnormality discovered was the abdominal enlargement, which, as no tumour could be found on vaginal examination, seemed to be ascites. She was kept under observation for several weeks, when it was discovered that her symptoms were as she had described; the intermittent enlargement of the abdomen varying from 32½ to 37 inches. She was seen on 6th May in consultation with Dr. Connon, but no tumour could be discovered; she refused an exploratory operation. She was put on a solid diet, with saline purgatives, and advised to rest. She was not seen again till 13th October, when the abdomen was found to be very much distended, umbilical measurement 42 inches. A distinct swelling could be found on vaginal examination, and she agreed to operation. On 17th October Dr. Connon opened the abdomen and removed a large multilocular ovarian cyst of the right ovary. It had five locules, was very thin walled. There were no adhesions. The patient made a good recovery and is now quite well.

A meeting of the Society was held in Dundee on the evening of Thursday, 5th February, Dr. Pirie, Vice-President, in the chair.

Dr. Foggie showed a case of severe inflammatory ringworm in a man who, having infected himself from some cattle under his care for that disease, applied the same ointment to his face, with disastrous results. When first seen the whole face was involved in an artificial kerion. Photographs showing the condition during various stages of treatment were exhibited.

He also showed a girl with favus of the nails of both hands, who for four years had been affected with the fungus in her head. Photographs of the condition were exhibited, as were also photos of a case of psoriasis, and a wide spreading syphilide.

Dr. Don exhibited a series of sections of cancer of the breast which had been cleared in xylol to show the manner of spread of the disease throughout the gland tissue.

Dr. Fraser read a paper on the treatment of certain diseases of the skin and mucous membranes by iontophoresis. He contrasted the method with the other methods of electric medication, pointing out the diseases most suited for treatment by each method. After giving details of the technique he went on to describe some of his results.

Rodent ulcer was in most cases very successfully treated by zinc chloride ions, a current of 10 to 15 milliampères for 15 to 20 minutes

being used. When the ulcer was large a heavier current was required, and as the pain produced was considerable, a general anæsthetic was advisable. For ringworm copper sulphate solution was used, and the simple forms readily yielded to treatment. For favus, much patience and time were required; the results, however, were more satisfactory than by any other form of treatment. Fibrous strictures of the bowel and urethra and chronic endometritis also could be treated, and the results were said to be very encouraging, though he had not seen a sufficient number of such cases to be satisfied as to the improvement.

Drs. Pirie and Don agreed that the treatment in many cases resulted in a cure, but Dr. Don was not satisfied that the ionic treatment could be expected to do good, except in the more superficial diseases.

Dr. Don read notes on a case of cerebral tumour in a boy aged thirteen which will be published in detail in a later number.

Dr. Buist read notes on renal decapsulation in puerperal cases which will appear in the *Journal*.

NEW BOOKS AND NEW EDITIONS.

Quain's Elements of Anatomy. Editors—E. A. Schafer, Johnson Symington and Thomas Hastie Bryce. In Four Volumes. Vol. III., Neurology. By E. A. Schafer and J. Symington. Part I. Eleventh Edition. Longmans, Green & Co. 1908.

This portion of the third volume of the new edition of *Quain's Anatomy* contains an account of the general structure and mode of development of the elements of the nervous system, and of the special structure of the spinal cord and brain, in a well illustrated volume of some 400 pages.

The enormous advance which has been made within the last few years in many branches of human anatomy is well exemplified in the subject with which this volume deals, and it may at once be stated that this edition marks a great advance upon former ones, both in the fulness and accuracy of the text and in a large number of the illustrations.

The first section dealing with the structural elements of the nervous system is admirably clear and complete, and the same criticism applies to the section which deals with the structure of the spinal cord, as seen with the naked eye and under the microscope. In the section dealing with the brain it is pleasant to find a full and authoritative account, which is also particularly well illustrated, of the comparative

anatomy of the cerebrum in the monkeys and apes, such as hitherto has only been found in special memoirs on the subject.

The conducting paths and the commissural fibres of the cerebrum and the connections of the nuclei of the cranial nerves form a portion of the anatomy of the brain which presents peculiar difficulties to the student, and it might be possible to introduce some more or less diagrammatic illustrations in colour into this portion, which would materially assist the reader in following the text. The volume, however, as it is, reaches a high pitch of excellence, and is well worthy of the high position which *Quain's Anatomy* has so long held as the standard treatise on Anatomy in this country.

Neurasthenia. By GILBERT BALLET, Professeur agrégé à la Faculté de Médecine de Paris. Translated from the Third French Edition by P. CAMPBELL SMITH, M.D. Pp. 408. London: Henry Kimpton. Glasgow: Alexander Stenhouse. 1908. Price 6s.

WE must congratulate the author in the first place, and the translator in the second, on the work they have presented to the medical profession. The changes introduced into the third French edition from which the translation is made add greatly to the value of the book.

Professor Ballet's work requires very careful reading, although we think that a little more trouble spent on the arrangement would have added to the ease with which the contents of the book could have been mastered. This friendly criticism should not be supposed to detract seriously from the undoubted value of the volume to the general practitioner, in whose experience so many and such troublesome cases of neurasthenia constantly occur.

The translator's introductory pages are interesting. He traces clearly the relationship of the hereditary element of degeneracy, which is an important predisposing factor in the production of neurasthenia, while he sharply differentiates this form from the adult type of neurasthenia in which no hereditary element is present. Surely *neurasthenia minor* is not a very appropriate term for a hereditary degeneracy so important and so full of baneful significance. In this connection we may add that, in our opinion, Professor Ballet ascribes too little value to the hereditary etiological factor. On page 14 he divides the hereditary cases into three groups, but only mentions and describes two of them, so that evidently Professor Ballet intended to add a third group, the exact nature of which we can only deduce from the chapter which follows.

Passing the various sections of the book under rapid review, we note that there is an excellent definition of neurasthenia and a clear description of its clinical features, and this will appeal to the physician

who seeks guidance for the diagnosis and recognition of cases of the disease. It is in the middle of the volume, where a little condensation would have been advantageous, that the reader is apt to find his interest flag.

Treatment is most suggestively dealt with. We are glad to note that hypnotism is condemned, while much stress is laid upon the moral influence of the physician in guiding and encouraging his patient. He is enjoined not to visit his patient too frequently, because the influence just referred to may "crumble away" unless the patient looks forward pleasurably to the physician's visit. An admirable section on diet is given, and the difference in treatment is indicated between pure neurasthenia, for which the patient must be fed up, and secondary neurasthenia, for which a very limited proteid dietary may be better. The weighing of the patient is insisted on, and it is carried out for the double purpose of enabling the physician to judge of the progress made and (where the weight is steadily increasing) of demonstrating the improvement to the patient.

The modest price of the book, and the fact that it is a mine of information on neurasthenia, will commend the volume to the consultant and general practitioner alike as an excellent and useful addition to his library.

The second edition of Dr. Lloyd's *Hay Fever and Hay Asthma* (Henry J. Glaisher, London, 1908), has succeeded so rapidly on the first that few alterations have been required. As it stands the book contains a very good account of the clinical features and pathology of the disease, including a description of Dunbar's work. The principal feature of the work, however, is an exposition of Dr. Lloyd's method of treatment, for which it is claimed that by adhering strictly to the directions given, 80 per cent. of cases of hay fever and asthma, whether of ordinary or hay asthma, can be cured. The palliative and general prophylactic measures recommended are not specially novel, but they are described with considerable fulness of detail, and ought on this account to be useful. The curative treatment advised varies according to the conditions found in the nose. Where obvious lesions exist they should be treated; where, as is most often the case, none are discoverable, "sensitive areas" of mucous membrane are sought for, and destroyed with the galvano cautery. Dr. Lloyd recounts a number of cases in which the procedure has succeeded.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

Jubilee of the Royal Hospital for Sick Children.

THE annual meeting of the Sick Children's Hospital, held on the 17th March, was this year possessed of a special interest, in that it celebrated the jubilee of the institution, and was graced by the presence of the two original founders of the hospital, both of whom, despite the fact that they were octogenarians, addressed the meeting, and gave many interesting reminiscences.

The practical inception of the hospital in 1859 arose from the fertile brain and warm heart of Dr. John Smith, who, in a letter to the *Scotsman* over the signature of "Sigma, M.D.," entered a strong plea for the foundation of a children's hospital in Edinburgh. This was followed by a leading article in the *Scotsman* strongly supporting the suggestion, and appealing for funds, and the first £100 in furtherance of the scheme was subscribed by Mr. George Barclay, now the only survivor of the first Board of twenty-four directors. A public meeting was held under the chairmanship of Dr. Hodson, Rector of the Edinburgh Academy, and shortly after this the promoters had the satisfaction of seeing a small hospital equipped and started. An advisory committee of four medical men was appointed to co-operate with the directors, and of those four we have happily two still with us in the persons of Dr. John Smith and Sir Henry Littlejohn.

The original hospital in Lauriston Lane quickly proving too small for its operations, Meadowside House, an old Edinburgh mansion, was purchased, and here for thirty years the hospital carried on its beneficent work. In 1890, the site being required for the extension of the Royal Infirmary, a removal was made to Plewlands during the building of the present handsome up-to-date hospital in Sciennes Road.

During the first year of the hospital's existence 172 children were treated in the wards, and 1275 as out-patients; whereas in its jubilee year 2275 patients were admitted to the wards, and 26,790 attendances were recorded in the out-patient department.

Amongst the members of the profession who have acted as physicians to the hospital, and added to its renown and reputation, we would

specially mention the names of Drs. Warburton Begbie, Matthews Duncan, Angus MacDonald, George Balfour and Charles Underhill. In congratulating the institution on the attainment of its jubilee, we trust that the next fifty years will record still greater progress in the knowledge and treatment of diseases of children.

Medical Inspection of School Children in Dunfermline.

THE Carnegie Dunfermline Trust has just issued the third annual report on the medical inspection of school children in Dunfermline. The report, which has been drawn up by Dr. Bridge, the medical officer to the Trust, is based upon the examination of 3743 children. The examination is confined to children whose parents have given consent, and Dr. Bridge once more bears witness to the general readiness of parents to allow their children to be medically examined. But in Dunfermline, as elsewhere, the granting of such permission does not always imply an equal readiness to go to the trouble or expense of medical treatment when such is advised. One of Dr. Bridge's tables shows the number of cases in which letters were sent to parents advising treatment, and the results of such letters so far as could be ascertained. It seems that such letters were sent in 333 cases altogether. In a little over 55 per cent. of these cases further advice was sought from the family doctor, or elsewhere. In 32·7 per cent. such advice was not sought. The remaining cases, numbering 40 altogether, were not traced, either through having left the district or for some other reason. Possibly in some of these cases a competent nurse could persuade the parents to seek the needed advice and treatment. Dr. Bridge strongly urges the appointment of such a nurse. English experience has shown that a nurse can be of great service both to the educational authorities and to the local medical practitioners, by seeing that the treatment prescribed, especially in cases of skin disease, is properly and perseveringly carried out.

Last year we referred at some length to the chief points in Dr. Bridge's Report, and this year we shall only notice briefly one or two points of interest.

The most common affection noted among the children is anæmia. This was found chiefly among the younger children, and particularly among the boys. Thus 154 boys were so affected, as compared with 110 girls. Dr. Bridge does not, however, suggest any reason for this prevalence of bloodlessness among the younger boys.

Speech defects were found in 28 children. In one case a boy acquired a stammer from a friend who is a very bad stammerer. Dr. Bridge found that many of these children improved greatly under special tuition from himself or from his clerk, and therefore feels warranted in drawing special attention to the improvement and advantage that could be obtained were such children placed under

the charge of a thoroughly trained and skilled teacher. Most of these children breathe very imperfectly. To assist in improving this condition, all have been sent to learn to swim, and this appears to have been of considerable benefit to the children.

In the matter of cleanliness Dunfermline does not seem to be any better than other parts of the country. The girls, as elsewhere, are worse in this respect than the boys. Only 46 per cent. of those examined were really clean, as against 60 per cent. of the boys. While parents are chiefly to blame for this state of affairs, school authorities could do something by providing more ample cloak-room accommodation, and by regular and frequent disinfection of the cloak-rooms. School nurses have been instrumental in effecting great improvements in some of the large towns in England.

With regard to tuberculosis, Dr. Bridge found only 3 cases of definite pulmonary tuberculosis out of 2240 cases examined. This is a striking contrast to the 30 per cent. of cases among school children recently reported by Dr. Philip—a contrast which it is impossible to believe really exists between the two groups of unselected cases reported upon by these two observers. It is to be hoped that we shall soon have statistics from different districts confirmed by some such test as von Pirquet's reaction.

Physical instruction occupies an important place in the Dunfermline schools. Organised games for the boys attending the elementary schools have been started recently, under the supervision of the teachers and students of physical training. At the College of Hygiene children suffering from deformities and various forms of bodily weakness receive appropriate physical and gymnastic treatment. During the past year a new college has been opened for the purpose of training male students in the theory and practice of physical training.

Mr. G. Bernard Shaw and Medical Socialism.

THE brilliant author of *The Doctor's Dilemma* has been at the pains to tempt the members of our profession to consider Socialism as the solution of the pressing problem of "How to keep alive as a Doctor." His method is plain and simple. When the Socialist millennium comes all will be well in medicine. The doctor will no longer be a tradesman. He is a tradesman just now and "abjectly poor" at that. This is because of competition. Further, he need no longer be a swindler. The ordinary patient demands cheap cures, the doctor has to gratify him, and so perpetrate a swindle. But—and this appears to be a curious combination—the present-day doctor is not only a swindler, but he is in a position to exercise an intolerable tyranny in the matter of the public health, by compelling people to do this and that and the other for the health of the community. These vulgarities and vices inherent in, and unavoidable under, present circumstances, are to be purged

away by Dr. Bernard Shaw's prescription. And what is the prescription? It is, in point of fact, an homœopathic one. *Similia similibus curentur;* the very tincture of Socialism which is now poisoning the life-blood of the profession will, if applied universally, cure just the very evils which it is now causing. For if Mr. Shaw had as practical a knowledge of the medical life as he has scientific knowledge of opsonins he would know that the "abjectly poor" in the profession are just the men who are working under Socialist conditions, or rather under the conditions which would obtain universally under Socialism, the slavery, namely, of "contract practice." The only difference would be, that whereas he is now the servant of a club, which position he may resign if he chooses, under Collectivism the doctor would be the slave of the State, from which slavery there would be no escape. Mr. Shaw says that there would still be private practice to fall back upon as an alternative. But, as under Socialism there would be no private capital and therefore no private incomes, there could be no private patients, and the last hope of the individualist would be gone. Again, Mr. Shaw's method of escape from the intolerable tyranny of the medical profession is by placing the public health service "under democratic control." It would appear—and we are quoting from the *Times* report of his recent speech to the Medico-Legal Society—as if Mr. Shaw were ignorant of the fact that the care of the public health is even now "under democratic control." And here, again, Mr. Shaw's remedy would fail him, for it is notorious that, next to the man of the clubs, the public health servant is the most poorly paid of the profession. Not only so, but if he thinks the "caprice and ignorance of private persons" to be "intolerable," let him ask the medical officer of health of any rural community in England whether ignorance and caprice are unknown in the minds of those who compose his local authority; and be it remembered it is such persons as these to whom the whole profession would be subject were the Socialistic vision to materialise. We sincerely hope that this delightful playwright will again devote his talent to the production of another *Major Barbara* and leave the medical profession to work out its own Salvation—which will be on other lines than the Socialist. For good or ill the doctor is a born individualist and will so continue; for upon individual energy and initiative, upon himself in short, he must depend; and the one poison that will certainly paralyse that energy is Collectivism.

Trained Nurses.

THE *Medical Record* (New York) of 20th February has a leaderette on the Rights and Duties of a Trained Nurse, which indicates a state of matters to which those interested in registration of nurses may most usefully direct their attention. "The majority of nurses in the registries connected with the large training schools of this city are on record as being unwilling to accept

employment in cases which do not come up to their requirements. For instance, Miss A. is registered against night work ; Miss B. against contagious cases ; Miss X. against patients where there are children in the family ; Miss G. against nervous diseases." A physician in a neighbouring town wanted a nurse "to care for his very sick child." "The request was refused at two of the registries . . . connected with the large training schools. . . . The reason given for refusal was that the nurses did not wish to leave the city just before Christmas." At a recent meeting "the prevailing sentiment was that the time was past for them to solicit favours from the medical profession. The two professions should meet on an equal basis and confer for their mutual benefit." If this is the sort of thing that results from registration the proposals now before Parliament must be very carefully considered.

In justice, however, to America, we must give one more quotation from the *Medical Record*. "On the same occasion, however, one woman, a teacher of nurses and of nursing, appealed with single-minded earnestness to student nurses to keep in mind this thought: not how much they could get out of the profession of nursing the sick, but rather how much they could put into it. To give the best of themselves, with the simple old-fashioned idea of making the world a little better. What a contrast!" We venture to add a quotation from a much older source than the *Medical Record*: "Because thou hast chosen this thing . . . lo, I have given thee a wise and an understanding heart . . . and I have given thee that which thou hast not asked, both riches and honour."

Radium.

"FINALLY, let me once more warn you against raising false hopes in discussing the potentialities of a little-known remedy." These words form the concluding sentence in the lecture recently delivered by Sir Frederick Treves at the London Hospital, but unfortunately they have not received the same attention from the public as the more sensational statements contained in the earlier portions of that now famous address. In reading it one cannot but feel that Sir Frederick has caught some of the Gallic enthusiasm of his hosts. All workers are and have long been familiar with the fact that radium is a most powerful remedy, and that under its influence, as under those of X-rays, many conditions previously obstinate to treatment have been either cured or greatly ameliorated, but we cannot see what object is gained by belittling the effects of these latter. Port wine marks were treated by X-rays with success years ago, hundreds of rodent ulcers have been cured by their means, and even acne keloid, a condition which appears greatly to have impressed Sir Frederick, has yielded to this despised remedy. If radium really cures the itching of eczema with one application, it indeed deserves all that he can say of it, and the dermatologist's

occupation will be gone. But the surgeon is in little better case—"Epithelioma of the tongue and epithelioma of the lip; they are cured by radium"—and so on. We welcome the fact that funds are forthcoming for the investigation of the effects—in London—and we especially welcome the fact that one of the jury which is to appraise the results is Sir Malcolm Morris, whose book on X-ray and Finsen light is the most judicial of all the pronouncements on a line of treatment which seems somehow to have a peculiarly unbalancing effect upon the judgment.

The late Thomas Wakley.

EVERY reader and correspondent of the *Lancet* must have shared in the sense of loss on hearing of the death of Thomas Wakley. It is not that he was personally known to them, for he assiduously practised the art of self-effacement, but in their dealings with the *Lancet* they found it to be managed on such fair, straightforward and honourable lines that they insensibly associated these qualities with him who was responsible for the conduct of the paper. We desire to add our testimony to those which have appeared in our contemporaries, and we cordially agree with the opinion that we have seen expressed, that he worthily maintained the honourable traditions of the great journal whose fortunes he was called upon to direct.

The Chair of Surgery in Aberdeen.

PROFESSOR OGSTON has now sent in his formal resignation, and the Chair is vacant. So far as we can learn there are only four candidates—the three surgeons to the Aberdeen Royal Infirmary (Drs. Scott Ridell, Marnoch and Gray) and Dr. Don, surgeon to the Dundee Royal Infirmary, an Aberdeen graduate. The Chair does not carry a hospital appointment with it, as do the Edinburgh and Glasgow Chairs.

Appointments.

DR. WILLIAM MACLELLAN has been appointed Physician to the Western Infirmary, in succession to the late Dr. Lindsay Steven; Dr. Leslie Milne, one of Professor Greenfield's assistants, Pathologist to the Russel-Sage Laboratory, New York; William Gemmill, M.A., M.B., Edinburgh, Senior, and F. Gordon Robertson, M.B., Glasgow, Junior, Assistant-Physician to Ayr District Asylum.

Sir William Gairdner's Works.

We are informed that Messrs. Maclehose of Glasgow will shortly publish the collected works of Sir William Gairdner. The volume will be prefaced by a biographical notice, and is to be edited by Dr. George A. Gibson, Dr. Eric Gairdner and Professor Lewis Sutherland.

A HISTORIC INSTANCE OF THE ADAMS-STOKES SYNDROME DUE TO HEART-BLOCK.[1]

By G. A. GIBSON, M.D., and W. T. RITCHIE, M.D.

It is not hyperbolic to designate the subject of the present paper historic. The distinguished position which the patient occupied in academic circles; the eminent place which he filled in the scientific world; the affectionate sympathy with which his illness was followed by medical friends scattered over the entire globe; the keen interest with which he analysed his own symptoms—all these considerations render it an instance of unusual value. One of us had for more than thirty years enjoyed the privilege and pleasure of intimate friendship with Sir William Gairdner, and throughout that period had never heard of any serious illness. As is, however, widely known, he was regarded as far from robust about the date of his graduation; he was indeed threatened then with some pulmonary affection—a fact which led to his spending some months in Italy with Lord and Lady Beverley at that time.

In the year 1899 Sir William Gairdner had a severe attack of influenza, and this led him to take the step which he had for some time been meditating—of resigning his Chair in Glasgow, and coming to live in Edinburgh. He had apparently recovered entirely from all the effects of the influenzic attack long before leaving the West, and at the great banquet held in his honour—the date of which was 19th June 1900—he was in his most interesting vein. When leaving Glasgow soon afterwards, he entered with zest into all the arrangements then being carried out for the settlement of his family in Edinburgh.

During the summer of that year, one of us was residing in Strathearn, and on the 20th of August, having come into Edinburgh on business, was summoned hurriedly by Dr. Wyllie to see Sir William, who had been brought to his house in Charlotte Square in an alarming condition. Upon that day, accompanied by Lady Gairdner and one of his daughters, the patient had started from Levenhall, where he was then staying, for Edinburgh. At the station where tickets were being collected it was observed that he made no effort to produce those in his possession, and it was found that he was in a condition of unconsciousness, with a degree of rigidity of the muscles. When seen along with Dr. Wyllie, he was in a condition of almost complete unconsciousness;

[1] Read before the Medico-Chirurgical Society of Edinburgh, 3rd February, 1909.

the face was very pale; the lips were rather blue; the pulse was feeble and irregular—its rate was only 16 per minute—the heart sounds were feeble, and it was then noted that the first sound was replaced by a systolic murmur. Under the circumstances no attempt was made at a thorough investigation of the circulatory condition, and our energies were entirely directed towards bringing about a recovery from the state of unconsciousness. These were fortunately successful, and in the afternoon Sir William was moved to a bedroom. He gradually but steadily improved; the pulse rose during the evening and night to its normal rate, and he was able to rejoin his family at Levenhall in the course of the following day.

Attacks of a similar character, but less serious degree, occurred in the following October, while Sir William was in London, whither he had repaired in order to receive the Moxon Medal of the Royal College of Physicians. After these incidents, as after the occurrence in August, he apparently recovered entirely. During the summer of 1901 he and his third son, Dr. Eric Gairdner, went to Norway, and the visit was in every respect most successful. Unfortunately, during the month of October of that year he was attacked by pain in the right thigh and leg, attended by some œdema of the foot; Dr. Church, who had kindly undertaken the medical charge of the family, was of opinion that the cause lay in thrombosis—a view in which Dr. Wyllie and one of us entirely concurred. About this time, and again in December 1901, some slight attacks occurred, but they were not of much importance, and during none of these was the actual condition of matters watched by any medical observer. After the seizure of December, which occurred during the early morning of Christmas Day, the pulse remained for some days irregular in rhythm, and infrequent in rate, although it was seldom below 50 per minute.

A serious attack took place on 6th July 1902, in St. Cuthbert's Church, which was characterised by the pulse-rate falling to 16 per minute, with unconsciousness and rigidity. On the 16th February 1903 Sir William was attacked while in a tramway car, and the same afternoon he was again seized by the symptoms, and fell in Princes Street. Two days later, nevertheless, he proceeded to London, in company with Sir William Turner, to attend the Meeting of the General Council, and in the house of Dr. Guthrie Rankin he went through several attacks; the usual pulse-rate was noted to be 40. On the 26th February he

returned to Edinburgh, and was observed to be very faint, but without any tendency to disturbance of consciousness; the pulse was about 40, as it had been in London. On the 4th March two attacks occurred in the early morning, with unconsciousness and spasm, particularly of the arms; the rate of the pulse on this day was 32. On the 5th March there were five seizures during the early morning, and a few occurred again on the 6th. After this date the pulse-rate never rose to more than 34 per minute, while it never sank below 28, and was almost invariably found to be 32. It is very interesting, further, to observe that from this time onwards there was neither any disturbance of consciousness, nor any tendency to rigidity of the muscles, except on one occasion—in July 1905—when a transient attack of faintness with loss of consciousness occurred. For many of these facts we are indebted to the kindness of Dr. H. Macdonald Church, who was in regular attendance upon Sir William Gairdner and his family after they settled in George Square. His careful record has been most useful in supplementing the more scattered notes made by one of us from time to time during frequent consultations with Dr. Church, at which Professor Wyllie also was occasionally present.

Sir William Gairdner took a lively interest in the development of his own symptoms, and discussed them and their possible causation with many distinguished physicians as well as some eminent physiologists. He manifested the alertness of his mind by thoroughly grasping the various considerations placed before him, arising out of the application of our modern knowledge to the clinical features of his own case. He followed with the greatest attention the results of observations by the graphic method upon his circulatory organs, and the investigation of the arterial pressure by means of modern instruments. The tracings which we obtained from time to time from the veins, arteries and heart were the subject of his critical analysis, and the discrepancy between the movements of the auricles and ventricles, which were then beginning to occupy the attention of scientific medicine, excited his clinical acumen in the highest degree. The enormous difference existing between the systolic and the diastolic pressure in his case—a subject which was then for the first time studied—led him to reflect upon the subject of arterial pressure, and he never wearied of discussing the various factors concerned in its maintenance.

It was extremely characteristic of him that he determined to

leave a record of his own impressions and observations. He began to write an account of the course of his illness in 1903, and finished it, partly by dictation, in the course of that year. As this description is full of information, it is, with the entire approval of his family, introduced in this place.

. . . . . .

"Having found reason to believe that certain attacks of illness to which I became subject in the year 1900 are, if not undescribed, at least not fully described hitherto, in their relation to other forms of organic or functional disease, I have thought it expedient to leave this record of them, and of my own case generally, for the instruction of whom it may concern, it being understood that my desire is that my medical sons, and all who have been so kind as to give me advice or assistance, shall have full discretion as to any proceeding that may throw further light on my symptoms, and also as to the form of any publication of the record that may appear to be most suitable.

At the time of the first of these attacks (August 1900) I was in my 76th year, having been born on 8th November 1824. As regards my previous health generally, I think I am justified in describing it as fairly good on the whole, especially in the latter half of life, extending to 30 to 40 years out of the 76. In early manhood I was far from strong, and, without having any apparently very dangerous illness, except typhus fever in my 21st year, I had several infirmities which bore the impress to my own mind of a rather delicate constitution—one of these being habitual constipation, culminating in very numerous and some excessively severe attacks of intestinal colic, which very uncomfortable, if not dangerous, proclivity pursued me at uncertain intervals during the whole course of my medical studies, and for many years afterwards, becoming, however, less frequent and milder in degree after I had passed my 40th year. As a younger brother had died of phthisis I was not without an impression that this, also, might be one of my predispositions, and indeed my appearance to others, as well as to myself, must have been, on the whole, the reverse of robust. It is, perhaps, not without significance in relation to the present narrative that throughout youth and early manhood the rate of the pulse was almost uniformally high, often over 100, even without any cause of abnormal excitement. I can make no precise statement as to temperature, the clinical thermometer not being then in use; but my impression is that febricula, perhaps not at all considerable, was not infrequently

present, and with it a sense of being easily chilled, and also easily flushed and overheated, from early childhood onwards.[1] Still, nothing occurred that can be distinctly cited now as amounting to evidence of tubercular disease. I never had any kind of articular disease (except, perhaps, occasionally "growing pains" in adolescence, and these not severe). There was nothing at any time to raise a question as to disease of the heart, and nothing, except the delirium of typhus fever, to suggest cerebral disorder of any serious kind, during the whole course of my life.[2] Still, I am inclined now, looking back over the whole past, to say that up to the latter part of my third decade the sense of physical infirmity, and of a possibly unsound constitution portending a more or less short career, remained with me;[3] and it was not till after removing to Glasgow in 1862 that I began to think it might turn out otherwise. In 1870 I married, and have no hesitation in saying that the years passed since this event have been much more full, not only of enjoyment of life, but of positive physical health, than those of my youth and early manhood. The colics, in particular, have ceased to trouble me, though the constipation has remained.

Two remarks may be made at this stage as completing, or qualifying somewhat, the preceding account of my general health from youth onwards. (1) It would not be difficult, I think, to make out, by implication, a gouty habit in my later life; but nothing has ever occurred even approaching to an acute attack of podagra or chiragra. (2) A rheumatic tendency might possibly be inferred as derived from my mother and my ancestry on the maternal side; but endocarditis (and organic disease of the heart of any kind) I do not know to have existed for three generations back, either on the father's or the mother's side, any more than regular gout. My brother John, indeed, when in his seventh decade,

[1] I suffered a great deal, even acutely, as a child from numbness of the fingers in cold weather; and as this was not allowed for by my nurses, it was the source of much real misery to me as a peculiarity that I was disposed to be somewhat ashamed of, and yet could by no means get over, besides the sheer physical suffering it involved. At school, I never could throw snowballs on this account, and up to a much later date was always what in Scotland is called "cauld-rife."

[2] A possible exception to this statement will be noted later on, in connection with the history of the attacks.

[3] This rather persistent impression of delicate health did not hinder me from working hard at my profession, but it certainly did prevent me from applying for life insurance till about my 40th year; and probably, also, with other considerations, had its effect in delaying marriage.

had *for the first time* an attack of regular gout, which indirectly proved fatal, for he had been for many years a glycosuric, and the gouty attack led up to an unusual ending in gangrene of the sole of the foot, under which, after several months, he succumbed, latterly with a form, I think, of diabetic coma. He, like my mother, passed for being "rheumatic" at various periods in his life, but never had, so far as I know, an attack of acute rheumatism or any kind of cardiac complication. This last remark applies, indeed, to the whole family history on both sides, as far as I can trace it.

The first departure from the strictly normal condition that had subsisted for years, in respect of the incidents about to be recorded, was on the 20th August 1900, at which time the family were in temporary occupation of a house at Levenhall, while the present house in George Square was being got ready for their reception. Lady Gairdner was superintending arrangements, and in consequence of this there was frequent railway transit between Levenhall and Edinburgh. On the morning in question I had left after breakfast with my wife and our youngest daughter, without any misgiving as to the integrity of my health, and nothing occurred until the collection of tickets in approaching the Waverley Station, when it was noticed that I did not respond for some little time to the collector's demand for the tickets, and no doubt was for some moments unconscious. Before the station was reached, however, I was again partially conscious, but on leaving the carriage, relapsed, and had to be conveyed into one of the rooms attached to the station, where, however, on again regaining consciousness, I gave directions to be taken along on a truck and put into a cab, and driven to Charlotte Square. I cannot positively affirm the state either of my consciousness or of my heart's action during this drive, when I was accompanied by the two ladies, but the result of it was that we were received by Dr. Wyllie, who placed me on a sofa in his drawing-room, and gave me certain stimulants, and other necessary remedies. During the 3 or 4 hours which succeeded, there must have been many attacks of unconsciousness, the nature of which was not quite obvious to myself or others at the time, but which were no doubt attended by rather extreme modifications of the pulse, and by apparently impending collapse. Dr. Gibson, as well as Dr. Wyllie, saw me during this period, which at last appeared to come to a crisis in an attack of vomiting, after which I was removed upstairs to a bedroom, and remained for 24 hours under observation before it was considered expedient to

allow me to depart. It may be mentioned incidentally that this was the only occasion during the whole course of the illness on which an attack of insensibility ended in vomiting. Of course, the minutest possible inquiries were made as to convulsion, paralysis, &c., and also as to any apparent exciting cause for these attacks, but I think I am correct in affirming that their precise nature remained unexplained; my own impression at the time leading to the view of something epileptiform, though without the usual concomitants, other than unconsciousness, of a fit of major epilepsy. I am not sure that the total number of unconscious attacks can be stated with accuracy, but they were numerous, and in all of them the heart was gravely affected, but the nature and extent of the affection was probably not very accurately noted at the time.

On recovering from this series of attacks, I resumed the ordinary course of my life, and had nothing definite to complain of for at least 8 weeks. On the 18th of October, however—St. Luke's Day—I was due to be in London to receive a clinical medal —the Moxon Medal that had been awarded to me by the Royal College of Physicians—and although the question was raised as to the propriety of my going to London, I felt so well as to leave on the 17th without misgiving, going to my club in St. James Street, where, fortunately for me, my friend, Dr. Gordon Sanders, was for the time also domiciled. On the invitation of Sir Dyce Duckworth, and after a simple and early dinner, we went down, all together, to St. Paul's to a service, in great part musical, on behalf of St. Luke's Guild, which was very largely attended, and even up to the commencement of the service I had still no misgivings, although feeling considerably fatigued by the very dilatory process of marshalling the robed guests who were in the nave in procession. As there was no insensibility on this occasion, and as I am not even now quite confident as to how far it resembled the preceding or succeeding attacks, I will only say that during the sermon I was only restrained from leaving the church by the prominence of my position, sitting immediately in front of the pulpit, and that as soon as the service was over Dr. Sanders and I made for my club in a hansom, only too glad to be relieved from a sense of impending disaster, which might have led to a scene. The succeeding night was one of great discomfort, attended by both sickness and diarrhœa, of which the only possible explanation that could be suggested as regards the dinner was that I had eaten of mushrooms. In this attack, however, there was no insensibility,

nor am I aware that the rate or character of the heart's action was at all profoundly affected. At all events, on the 18th I felt so much recovered that I not only attended at the College and received my medal, but attended the annual dinner of the College thereafter, and made a speech as a guest without any sensation of discomfort, returning home the next day apparently in my usual health.

Between the events in the autumn of 1900 and those now about to be related there intervened a period of what I should call fairly good health, in which I remember no incident at all worthy of notice in this record, unless it be that the knowledge of what had occurred may have made me more careful, both in taking ordinary exercise and in committing myself to engagements away from home. I attended the meeting of the Medical Council in the summer of 1901, staying in London at my club without any serious interruption; it was then proposed to me to make a journey to Norway with my son Eric, but this proposal was made as much on his account as on mine, he being supposed to be in need of a holiday in the interval of his medical studies. I had been in Norway more than 20 years before, but I very gladly accepted the proposal, and we sailed in the beginning of August by the s.s. *Midnight Sun* from Newcastle, the trip occupying a fortnight. During the whole time I was perfectly well, and enjoyed everything very much, but was conscious of an indisposition for much physical exertion, and I did not, therefore, attempt any of the longer excursions involving either walking or climbing, but confined myself to such as could be done by driving, with a little walking uphill. It never occurred to me, however, that I was breathless in any serious degree, even in walking up the zig-zag road from Gudvangan, which I did to the extent of several hundred feet, though with a certain sense of fatigue, but not at all of serious oppression. I feel quite confident in stating that, apart from a sense of a diminution of vigour, and, perhaps, a degree of natural apprehension of the consequences of over-exertion, I never felt a single hour's discomfort during the whole of the Norway trip, and did not lose a single night's sleep.

About this time I had some slight inconvenience amounting to pain, and even a certain amount of halting, with tenderness in the calf of the right limb, which in connection with the previous incidents led to Dr. Church and Dr. Gibson being consulted as to the possibility of some kind of thrombosis. Nothing of the kind was positively detected at any time, but the inquest into this led to the discovery of some very slight tendency to œdema, so slight, however,

that I myself was not quite convinced of its actual existence, although both my sons and Dr. Church held it to be occasionally present, and I, therefore, agreed to pursuing a more or less diuretic course of treatment, with observations on the quantity of the urine, which, however, did not lead up to any very definite result. Digitalis was commenced about this time, and although the quantity of the urine was quite satisfactory, and sometimes, indeed, though not commonly, rather in excess, the digitalis was continued in various combinations, and, especially after consultation with Dr. Balfour, it was, as a rule, part of the treatment, even although not producing any marked physiological effect.

About a fortnight after this, in November 1901, an attack occurred in the very early morning, being the first time that the seizures had taken place while in bed and while asleep. It was noticed by my wife in consequence of some disturbance of the breathing, and my son Eric was immediately sent for; he found the pulse below 40 in the minute, but pretty full and regular. It is supposed that the unconsciousness on this occasion may have lasted an hour, and it must have led to some apprehension, for two hypodermic injections of ether were administered without any sign of sensibility. There was a certain amount of cyanosis and coldness of the extremities, which were met by a local application of hot water, and hot water administered by sips internally, which were swallowed unconsciously. On the termination of the unconsciousness, the pulse returned to the normal rate.

On Christmas morning, 1901, about 7 A.M., an attack occurred somewhat like the last, but more brief, the unconsciousness lasting only 10 minutes; during this attack the pulse was found to be 36 per minute, regular, and not at any time difficult to catch; similar remedies were applied. The only reason for mentioning this attack separately was that it was followed by a period of some weeks characterised sometimes by infrequency, and sometimes by irregularity, of the pulse, though without any further unconsciousness. During the Christmas week almost every possible kind and degree of irregularity was observed, sometimes alternating full and small pulsation, sometimes 3 or 4 comparatively rapid and small beats followed by a fuller one. As these irregularities were not accurately and individually noted at the time, and as no tracings were then got, it can only be said in general terms that diminished rate did not infer irregularity, but rather the opposite. On New Year's Eve Dr. Church called and found the rate a little over 30 in the minute, but the rhythm so regular that he was

asked to compare it with the cardiac rhythm in order to make sure that the low rate felt at the wrist did not signify double the rate at the heart, with alternating smaller beats which did not reach the wrist; Dr. Church, however, satisfied himself that there was a true bradycardia, the rate at the heart exactly corresponding with that at the wrist. The subjective sensations connected with these variations were not very easy to define. Knowing, as I did, all the facts, it was not possible that I should be altogether unmoved by them, and I think it fair to say that this week was to me one of a certain amount of physical discomfort. On the other hand, there were none at all, or next to none at all, of what could be called grave cardiac symptoms, no trace of anginoid symptoms, or of pain in the cardiac region, or of dyspnœa properly so called; the nights were, as a rule, undisturbed, and, if there was any relative insomnia, it was only from a certain amount of apprehension, founded upon the pulse, that one of the attacks already mentioned might possibly be impending. In carefully studying, as I did, the degree to which I had any consciousness of these irregularities of cardiac rhythm, I found that in certain positions when in bed I could count the cardiac pulsations without feeling for them either at the heart or wrist, but in other positions, and for much longer periods, I was practically unconscious of the cardiac pulsation, and, on the whole, I find it difficult to determine whether the subjective state above referred to can be called morbid or not: it certainly did not *per se* amount to a serious inconvenience, and did not cause me much anxiety, or interfere practically with a single night's good rest.

On the first Sunday of July 1902 I went as usual to St. Cuthbert's Church, being at the time, according to my own reckoning, and subject to the previous statements, altogether without misgivings, and as nearly as may be in perfect health. I had, however, to a certain extent, the habit of sparing myself, and not infrequently avoided standing up during the singing for at least a part of the service. On this occasion all went well until near the end of the sermon, and then for a few seconds (no one else observing the fact) I became aware that I had passed into an unconsciousness which was not sleep, but was attended with something of the disagreeable sensation of former attacks. There was a baptism of a number of children to follow, and being very much interested in this part of the service, I stood up, though quite realising that this was perhaps imprudent under the circumstances, and noticing also that the atmosphere of the church was somewhat

oppressive. Perhaps as a consequence of this, another attack occurred, which attracted attention, and I had to be carried out of the church into the vestry, where I soon became sensible again, and found that Dr. Carruthers was attending, and administering some whisky, as I have no doubt he had recognised symptoms of cardiac failure. I was soon, however, in a condition to be taken home in a cab, and was then placed in bed, and received all the attentions that were considered necessary. For several hours following this attack of unconsciousness I think it must be inferred, from all that came to my knowledge, that my life was in considerable danger; the pulse, which had been very small since the attack, being numbered as low as 16, and never above 30 per minute, while the face was bedewed with cold perspiration, and the subjective sensations were certainly those of dissolution at various times, but still nothing like cardiac anguish, or considerably disordered respiration. In fact, I can say with complete conviction that, although my state, medically considered, must have been dangerous, and though I was fully conscious of the danger, I had at no time any degree of physical distress or pain corresponding with this, and was perfectly free from anxiety, moral or physical, except such as is inseparable from the idea, several times expressed in words, of possibly, or probably, parting from this life, and all its interests and cares, within a space measured by hours or minutes, as the case might be. When two of my children came to tell me they were going to church in the evening, I took leave of them with the inward feeling that I might not see them on their return;[1] but notwithstanding this, I had no sense of depression, or of overpowering emotion, and certainly no such fear or sense of instant death as to correspond with what I have myself written about as *angina sine dolore*. The clammy cold sweat, however, continued, and the sensations, though certainly not agreeable, were not painful, and not in any definite way to be referred to the heart, except by reasoning from the state of the pulse, which continued up to about 7 P.M. (or over 6 hours from the attack in church) to number not much over 30 per minute. At this time another attack of unconsciousness occurred, and my son, who was with me during the whole time, reports that this was, in his view, the most alarming of all, in respect that there was

[1] This remark by Sir William vividly recalls the account of the symptoms of Mr. Hyde, father of the first Lord Clarendon, *vide Life of Edward, Earl of Clarendon*, written by himself, Oxford, 1759, p. 9. The passage is quoted by Gibson, *The Nervous Affections of the Heart*, Edinburgh and London, 1904, p. 3.

considerable cyanosis, and that the respiration appeared to be suspended, the eyes at the same time staring, and not responding to the reflex of the eyeball. There never was, as my son tells me, anything of the definite character of the Cheyne-Stokes respiration. The attack just described was, however, very brief, lasting not more than a minute; the pulse continued without change at a little over 30 till after consciousness was restored, and then came a kind of crisis, the whole of the unfavourable symptoms passing rapidly away, the pulse returning to 70 a minute, and perfectly regular, with complete warmth and comfort. I have dwelt on these details because this attack, lasting in all about 7 hours, was by far the most serious I ever experienced, with the possible exception of the first one (or rather series of attacks) in the autumn of 1900; and although undoubtedly cardiac as regards the bradycardia, it left on my mind (as the previous ones did) the impression that the cerebral element predominated.

After considerable additional experience of the attacks previously adverted to during the last few weeks, it is now, I think, possible to classify the whole series occurring since the autumn of 1900 as follows:—1. In most, if not all, of the earlier attacks, namely, those that took place quite unexpectedly, and in the midst of what seemed to be good health, it now appears to me that there must have been quite suddenly a brief, sometimes momentary, loss of consciousness, more or less complete, associated with a practically simultaneous fall in the rate of the pulse of from 20 to 40 beats in the minute—the latter being always considerably more persistent than the unconsciousness, and extending over from half an hour to several hours, but ending in a return to the normal rate. It is difficult to be quite sure of the details as to the bradycardia, because of its having supervened so suddenly as not to have been quite closely watched at its beginning, but in typical instances when either I myself, or some near relative, was able to make the observation, the pulse immediately after the period of unconsciousness was found to be small, and of a rate varying from 20 to 40, but, as far as observed, always quite regular at this rate, and reverting towards the normal sometimes with the occasional omission of a beat, or slight irregularity during the rise to the normal rate.

2. The above description applies probably to all the attacks occurring unexpectedly in the midst of normal health. At a later period, towards the close of 1901, when considerable irregularity of the pulse was noticed extending over several weeks, and of the

most varied possible character, bradycardia still accompanied some of the attacks which were not, however, so characteristic or so long continued in their effects as in the first series; of this period, however, no very detailed facts can be given, and, on the whole, the frequency and character of the attacks of unconsciousness bore no proportion to the irregularity of the pulse, but rather, if anything, seemed to be less prominent when the latter was at its height.

3. In the later periods of the case, and especially within the last 3 weeks, bradycardia has been present, and is still present, with a continuity not known at any previous period, the rates varying from 20 to 40, and perhaps averaging rather below than above 30, but never quite so low as after the nearly fatal attack which commenced in St. Cuthbert's Church. During this last period the attacks of unconsciousness, though mostly very brief, and measured by seconds, have been much more frequent, and in a certain sense disturbing, than they ever were before; they have mostly, though by no means exclusively, occurred at night, and often for many nights consecutively (not infrequently during sleep), and attended by sensations almost indescribable, but possibly more allied to vertigo than anything else—very molesting at the time, and possibly tending to exhaustion, but not accompanied by any cardiac sensations whatever, and even as regards the pulse, of which I was always unduly conscious, not conveying in the least degree the feeling of syncope, or of angina pectoris, but rather that of an internal throb throughout the chief vascular areas which I often watched carefully, comparing it in my mind with the dull throb which I experienced in my berth in an Atlantic liner in 1891, and which conveyed no sense whatever of panic, or even of great inconvenience, beyond the fact of its being obviously abnormal. It is notable that while during the last few days the frequent attacks of unconsciousness have entirely given way to a sense of comparative comfort, and perhaps an average of from 8 to 10 beats rise in the frequency of the pulse, which have never, however, exceeded 40, these vascular throbs have been much less apparent, and have indeed almost disappeared from the consciousness. I must again most emphatically state that, according to my later experience, the frequently recurring cerebral attacks appear to myself to have no cardiac symptomatic expression, and in most cases were not accompanied by any manifest depreciation of the rate of the pulse, but seemed, on the other hand, to be always accompanied and followed by cerebral perturba-

tions, of which I find it quite impossible to give any description that would convey to others a clear idea of what they were to myself. I make this remark after having carefully watched an almost indefinite number of these attacks, in some of which the unconsciousness was so slight and incomplete that I was able to realise the subjective phenomena from beginning to end. A good many of these very minor attacks were distinctly attended by what I should incline to call an aura, mostly as if a cold breath of air were playing upon the face, sometimes, however, the sensation being rather of warmth than of cold, and never spreading over the body generally. I have put the question repeatedly as to whether any obvious motor spasm had accompanied these attacks. Anyone who has been with me for some time says there was some rigidity of arm and wrist, and also a degree of risus sardonicus; these possibly belonged to the beginning of the attack, and to the period of complete unconsciousness. There was at no time any cry, but the occurrence of the seizure was often noticed through perturbations of the breathing. About 10 days ago, when my own sensations were certainly those of closely approaching death, there was still a complete absence of anything like cardiac oppression or inconvenience of any kind, the sensation being simply that of vitality ebbing away without suffering of any kind, and without anything approaching what I take to be the sensations of syncope (though I have rarely experienced them), and can only further state that the pulse, even at the worst, though with marked reduction of rate to 20 in the minute, or thereby, was never at any time markedly irregular or imperceptible to the finger. I should like also to mention that though I have had a considerable amount of flatulence and other digestive disturbances during the varied course of these complaints, it appears to me now to be quite certain, after careful watching, that in no instance was either gastric or intestinal flatulence, or any other digestive disturbance, a contributor in any marked degree to the occurrence of the attacks."

This description, founded upon the observations which the patient made upon himself at the time of the various seizures, and recorded at the later period when the intermittent attacks of infrequent pulsation, with consequent fainting, were giving place to persistent reduction of pulse-rate, unattended by any nervous consequences, is certainly one of the most interesting contributions to the literature of cardiac disease.

It will be observed that there are two discrepancies between the impressions described by Sir William and the facts recorded by his medical attendants. In the first place, there can be no doubt that the attacks of infrequent pulse and cerebral symptoms were sometimes, at least, very definitely caused by digestive disturbances. The first seizure, for example, was undoubtedly produced by imprudence in diet. As this is a matter of practical importance, it is only right to refer to it. In the next place, he very decidedly expresses the opinion that the attacks of illness were of cerebral, not cardiac origin; he was somewhat inclined to such a view as one of the members of his father's family had suffered from epilepsy; this belief, however, he modified during the later months of 1903, and in the course of 1904, after carefully studying with us the graphic records of his heart and vessels.

(*To be concluded next month.*)

THE TUBERCULOSIS PROBLEM AS AFFECTED BY THE INTERNATIONAL CONGRESS ON TUBERCULOSIS, HELD AT WASHINGTON, SEPTEMBER TO OCTOBER 1908.

By R. W. PHILIP, M.A., M.D., F.R.C.P.,
Physician to the Royal Infirmary, and to the Royal Victoria Hospital for Consumption, Edinburgh.

After two previous International Congresses, held respectively in London (1901) and Paris (1905), the opportunity was taken by me to contribute to the *Edinburgh Medical Journal* a short review [1] of the tuberculosis problem as affected by the meetings in question. My purpose was to focus various opinions expressed at the Congress, and, more particularly, to try to determine what advance had been made in our knowledge of tuberculosis, what new ground had been broken, and what seemed the practical outcome of the meeting.

In the remarks which follow, it will be my endeavour to consider in similar fashion the results of the recent International Congress at Washington. It is impossible, while still so close to the meeting, to estimate these completely. The list of communications is immense, and the value of some of the best of these can only be fully appreciated when the papers are printed in detail.

[1] *Edinburgh Medical Journal*, September 1901 and December 1905.

The meeting was a large one. The enrolment amounted to over 6000 members, and thirty-three nations were represented officially. The Congress was subdivided into seven sections, namely, (1) Pathology and Bacteriology; (2) Clinical Study and Therapy of Tuberculosis—sanatoriums, hospitals and dispensaries; (3) Surgery and Orthopedics; (4) Tuberculosis in Children—etiology, prevention and treatment; (5) Hygienic, Social, Industrial and Economic Aspects of Tuberculosis; (6) State and Municipal Control of Tuberculosis; (7) Tuberculosis in Animals and its Relation to Man.

In addition to discussions and communications of various kinds submitted to the sections, there was a series of general addresses by representative men from various countries. Some of these were delivered in Washington, and others in various of the leading towns of the States. An excellent exhibition was arranged in which were illustrated the remarkable advances achieved in both the scientific and practical aspects of the subject in most civilised countries. These, as might have been expected from the *locus* of the Congress, were for the most part conspicuously practical in respect of prevention and treatment. In this matter the exhibition showed how rapidly thought had developed since last international meeting.

It will be convenient if, as on previous occasions, we consider the outcome of the Congress as regards I. Pathology; II. Diagnosis; III. Prevention and Treatment of Tuberculosis.

I. Pathology.

Variations of the Tubercle Bacillus.—Arloing, a firm believer in the unity of the tubercle bacillus, presented the results of his study of the tubercle bacillus in respect of variation in morphological and cultural characters and virulence. He detailed the variations of bovine and human bacilli which he had produced by means of special cultural methods whereby their virulence had been lowered or increased. His observations and those of other workers go to show that the virulence of the avian bacillus and of the bacillus of mammals can be modified either spontaneously or artificially. Such variations, he believes, explain the differences observable in severity and in other clinical manifestations of tuberculosis. From the hygienic point of view, they justify precautions against the tuberculous virus, whatever its origin.

Fibiger and Jensen reported the results of their investigations on a series of tubercle bacilli isolated from man and from cattle,

in respect of virulence and morphological and biological characters. As the result of a large number of observations, they believe that it is impossible to make a sharp separation between the bovine and the human bacillus, although it is certain that the majority of cultures from bovine sources possess the characters usually attributed to the bovine, and the majority of cultures from human sputum possess characters which have been attributed to the human bacillus. They are of opinion that certain cultures are obtainable which possess some of the characters of the human and some of the bovine. These they describe as transition forms.

Relation of Human and Bovine Tuberculosis.—The vexed problem has not been seriously influenced by the recent Congress. A good deal of skirmishing took place, but in the end the question remains much where it has been during the past few years. We are still at the stage of collecting facts. There is much need for exactness, both in the apprehension of the question at issue, and in the conduct of experiment with a view to its solution.

While we commonly speak of the "human" and "bovine" bacillus, it is not yet clear to what extent we are dealing with two different bacilli. Some authorities insist on considering the question as if the distinction involved difference of *species*, and proceed thereafter to submit evidence against the dualistic view. As Koch has pointed out, however, our present knowledge does not suggest the existence of different species, but rather of two different "types" (Kossel)—the human type and the bovine type. These types possess certain definite and readily recognisable differences when obtained fresh from the tuberculous lesion respectively of man and of cattle. The differences are so constant that the formal recognition of a distinction is convenient. The question of the extent to which each of the two types may be modified by cultural methods is a separate issue. The bacilli, when obtained fresh, present well-marked morphological differences. In culture on glycerinated serum, bacilli of human type grow rapidly, forming a thick layer, while those of bovine type grow slowly in a thin layer. Bacilli of human type, while virulent to guinea-pigs, and, in a less degree, to rabbits, are almost non-virulent to cattle. Those of bovine type are highly and equally virulent to cattle, guinea-pigs and rabbits.

The question is, to what extent and under what conditions do the two types severally occur in the human and bovine subject. With reference to this line of observations, Koch desiderates the utmost care. He insists that animals used for experimentation

must be entirely free from spontaneous tuberculosis. In order to exclude fallacy, observations must be made on a large series of animals. Single exceptions in an extensive series of experiments are likely to depend on experimental error. They must not be seized upon as proving any point. Such isolated occurrences should rather raise doubt as to the method that has been followed. The question is, What is the trend of collective observations? It goes without saying that animals under observation must be rigidly protected against incidental tuberculous infection. This is particularly important in relation to bovine tuberculosis, to which animals commonly used for experiment are extremely susceptible. Animals inoculated with bacilli of bovine type *from* human source must be most rigidly separated from those inoculated with bacilli *actually of human type*. It must be kept in view that mixed infection by human and bovine tuberculosis may occur. In such case, if proper precautions be not taken in animal experiments, bovine tuberculosis obtains supremacy and so causes fallacy.

In connection with feeding experiments, Koch points out the risk that the sputum used for such feeding experiments may be contaminated by particles of food stuff, *e.g.* milk, butter, &c., which may contain tubercle bacilli of bovine type. In conducting feeding experiments, the sputum of a *single* consumptive patient should be used for *one* animal throughout, and care must be taken that, during the experiment, the patient consume neither milk nor butter.

Koch's present conclusions differ little from those communicated to the London Congress in 1901. Shortly stated, they are as follows :—The tubercle bacillus of human tuberculosis differs from that of bovine tuberculosis. Bacilli of human type have never been demonstrated in cattle. Bacilli of bovine type may occur in man, but serious disease is rarely due to their presence. They have been found in the cervical glands and the intestinal tract. With few exceptions, bacilli of bovine type have been shown to be but slightly virulent, and their effects remain localised.

Cases quoted by Arloing and others, in which tubercle bacilli of bovine type were obtained from a pulmonary cavity in the human subject, have not seemed altogether free from fallacy. The extreme scantiness of evidence of the kind emphasises the need for caution in judgment and the utmost care in observation and experiment. It is a very striking fact that, out of the enormous number of persons dying of pulmonary tuberculosis, in hardly a single instance have tubercle bacilli of bovine type been certainly demonstrated.

In practically applying his conclusions, Koch does not minimise the significance of the bacillus of bovine type in relation to preventive measures against tuberculosis as it occurs in cattle. His point is that, while it is doubtless desirable to limit and, if possible, eradicate bovine tuberculosis, yet, in respect of human infection, the prevention of bovine tuberculosis is a relatively insignificant factor as compared with the direct prevention of tuberculosis traceable to inoculation with bacilli of human type. Although measures against bovine tuberculosis should not be neglected, preventive measures, if they are to be successful against the graver manifestations of tuberculosis in the human subject, must be directed primarily against tubercle bacilli of the human type—that is to say, against a spread of disease from person to person by way of bacillus-containing discharge. It is very desirable that the issue should be plainly stated, so that it may be effectively met. While in no sense disparaging measures directed to a pure milk supply, and generally towards the eradication of bovine tuberculosis on agricultural and economic grounds, Koch objects to these measures being unnecessarily mixed up with those directed to the prevention of the spread of tuberculous disease from man to man.

Considerable criticism of Koch's views took place, but his main position was not very successfully contested. Many authorities are inclined to the view that the point has not yet been settled. There remains need for further investigations on a large scale, more particularly as to the possible occurrence of bovine tubercle bacilli in relation to human pulmonary tuberculosis. The investitions will, of necessity, be lengthy and costly. Between now and the next Congress, to be held at Rome three years hence, ample time is afforded for research. The discussion at Washington has served to clear the air and to define the issue.

Channels of Infection.—The channel of infection in tuberculosis still remains a debatable point. At the Congress, both inhalation and ingestion found supporters, the consensus of opinion being, perhaps, that inoculation of tuberculosis is possible by either channel. Evidence was led to prove the possibility of infection through uninjured mucous and cutaneous surfaces. It was shown by Courmont and others that, in the guinea-pig, rabbit and calf, the skin, although apparently intact, or deprived only of hair, readily allowed the tubercle bacillus to pass through under certain conditions, with resultant or general infection. They argued that consequently the skin and mucous membrane

must not be ignored in medical and veterinary practice, and that the absence of a visible lesion was not sufficient evidence against this mode of invasion.

Several papers discussed the significance of flies as agents in the dissemination of the tubercle bacillus. Observations went to show that flies caught in the open air do not contain tubercle bacilli or other acid-fast bacilli which could be mistaken for them, but that flies fed on sputum evacuate considerable quantities of tubercle bacilli in their excretions for hours or days after ingestion, and that food polluted by such flies may contain tubercle bacilli capable of producing tuberculosis in guinea-pigs. Flies caught at random in hospital wards have been found capable of producing tuberculosis in guinea-pigs.

Frequency of Tuberculosis.—Statistical tables have varied somewhat as to the frequency of pulmonary tuberculosis. Further evidence on this important subject was presented in an analysis of 1000 consecutive autopsies in Montreal (Adami and M'Crae). Of the 1000 cases, tuberculosis was found in 417, *i.e.* 41·7 per cent. These included (*a*) healed cases 151, (*b*) latent 93, (*c*) active, slight 22, (*d*) generalised 43, (*e*) pulmonary phthisis 86, (*f*) tuberculosis of bones 12, (*g*) genito-urinary 10. It is of much interest to notice that if we combine the groups of healed and latent tuberculosis, we find that 58·5 per cent. of the cases had successfully met the tuberculous invasion, death being due to other causes.

The Relative Frequency of Abdominal Tuberculosis in Various Countries.—Attention has more than once been drawn to the much greater frequency of abdominal tuberculosis in Great Britain than in the States. Dr. Bovaird of New York has remarked that in a single day at the Royal Hospital for Sick Children in Edinburgh he had seen more abdominal tuberculosis than in ten years' hospital and dispensary practice in New York. Recent investigation has shown that the remarkable discrepancy between Great Britain and the States is real, and not due to difference of interpretation or terminology. The difference is sufficiently great to suggest that some special condition must determine the unusual frequency in Great Britain. The suggestion naturally occurs that the greater frequency in Great Britain is due to a greater frequency of tuberculosis in cattle, but the actual data regarding bovine tuberculosis do not bear this out. The facts, as a whole, show that, in many countries, abdominal tuberculosis is not so common in actual infancy (0 to 2 years)

when cow's milk is most used as food, as in the later periods of childhood. Thus, among 1432 autopsies on children from the hospitals of Paris during the course of 14 years, Comby found 529 tuberculous subjects, or about 37 per cent. Among 216 infants from 0 to 3 months, only 4 showed tuberculosis, or less than 2 per cent. Of 1008 from 0 to 2 years, 252 were tuberculous, or about 25 per cent. After the second year the proportion of tuberculous cadavers increases enormously, reaching successively 45, 50, 60, 65 per cent. Such figures make one hesitate a good deal as to the etiological relationship of milk. Comby frankly traces the whole to human contagion. In keeping with these facts are the results of 1400 examinations with the cutaneous test at the Escherich Clinic, Vienna, which show the definite increase of tuberculosis from year to year in the life of the child.

II. Diagnosis.

So far as physical signs are concerned, there was little of fresh interest submitted. Convincing illustrations of the value of X-ray examination were presented. The beauty of some of the skiagrams exhibited was remarkable (Williams, Boston). There was no further evidence to show that X-ray examination could replace physical examination. It is rather of corroborative value, and affords the possibility of permanence of exact record. Wolff-Eisner pointed out the occurrence of lymphocytes in the sputum as an early symptom of commencing tuberculosis. They make their appearance before the tubercle bacilli.

The value of the tuberculo-opsonic index as a guide to diagnosis and control of tuberculin treatment came up for consideration. The prevailing feeling seemed to be that, while the line of observation was interesting and suggestive, it was only in exceptional cases that it could be regarded as of much diagnostic value. The view was generally maintained that it was impracticable to carry out the test sufficiently frequently in any large body of patients to make it of much value with regard to amount and spacing of dosage. The procedure for the determination of the tuberculo-opsonic index is itself accurate, but the relationship between the tuberculo-opsonic index and tuberculin immunisation remains too indefinite to admit of the test being used for the purpose of controlling tuberculin injections. Those who have had most experience in the use of tuberculin as a therapeutic agent are convinced that, with ordinary care in the estimation of other clinical

evidence—temperature, pulse, general aspect, &c.—the amount and frequency of tuberculin dosage may be sufficiently regulated.

A good deal of attention was naturally directed to the cutaneous and conjunctival tuberculin reactions. In relation to the cutaneous test, von Pirquet, who first proposed it, reported that of 1600 children who in Vienna underwent the test, it had been possible to carry out post-mortem examination in 200. Of these, 68 had given a positive reaction, of whom 66 revealed at autopsy macroscopical tubercles. In two remaining cases the post-mortem result was doubtful, although one presented pleuritic adhesions. The conclusion seemed fairly justified that a positive cutaneous reaction meant the presence of tuberculosis. Of 132 cases which gave a negative reaction, 109 yielded entirely negative results post-mortem. The remainder included several cases of fatal tuberculosis when the test was only applied some days before death, and cases of tuberculosis when the test was made during measles. In a small remaining group no certain explanation was forthcoming. The value of a positive result is quite clear.

A good deal of evidence was submitted regarding the conjunctival test. Wolff-Eisner, who first described it, emphasised its value as a positive test of active tuberculosis. His statistics went to show that the reaction is positive in 85 per cent. of all cases of active tuberculosis in the initial stage. He distinguishes "normal" reaction, which runs its course in 4 days; "rapid" reaction, complete in 24 hours, which indicates an unfavourable prognosis; and "permanent" reaction, persisting from 6 to 20 days, which is prognostically favourable, and is observed chiefly in cases of healed tuberculosis. Calmette's statistics are interesting. Of 2894 patients presumably tuberculous on other grounds, 92·05 per cent. gave positive reaction to the conjunctival test; of 1081 persons with suspicion of tuberculosis, 57 per cent. gave positive reaction; and of 2328 persons apparently healthy, *i.e.* without suspicion of tuberculosis, 16·8 per cent. only gave positive reaction. Of 55 persons who gave positive reaction, although not previously suspected of tuberculosis, and who on other grounds came to post-mortem examination, macroscopic tuberculous lesions were detected in 49. In 6303 tests the number of complications noted were few, namely, in 3 phlyctenular keratitis, and in 25 conjunctivitis. In 72 cases the reaction continued between 3 and 4 weeks. In no instance did graver disturbance occur. Early reactions tend to occur most frequently in suspected tuberculosis, while late and slight reactions occur in developed tuberculosis. Advanced cases

and those with acute miliary tuberculosis and other evidence of widespread intoxication may fail to react or only react feebly. Baldwin formed the following conclusions from 1087 conjunctival tuberculin tests by a uniform method:—The test, performed with weak solutions in a single instillation, has some value in confirming the presence of tuberculosis in early stages. It has little value when the symptoms of tuberculosis lead only to a suspicion. Its value in distinguishing active and latent from healed tuberculosis in apparently healthy persons has not yet been determined. The conjunctival reaction is unreliable for prognosis. Used with proper precaution, the test presents little risk, although the cutaneous test, which has been found equally valuable for children, is still more harmless. Speaking generally, the cutaneous test, by the simultaneous use of dilute and strong tuberculin, affords a method of at once detecting tuberculous infection, without danger or inconvenience.

The general feeling was that both tests were of considerable diagnostic value, while not absolutely reliable. The cutaneous test has the advantage of being entirely harmless, while the conjunctival test is not always so.

An attempt was made to differentiate between infection due to tubercle bacilli of the human type and that due to bacilli of bovine type. For this purpose Detre recommends the simultaneous application to the skin, according to von Pirquet's method, of 3 different solutions—(*a*) concentrated old tuberculin, (*b*) filtrate of culture of bacilli of human type, and (*c*) filtrate of bovine culture. According to the method, tuberculous subjects may be divided into groups—those which are positive to human, and those which react to bovine, toxin. The observations, so far as they have been carried, go to show that more than 90 per cent. of cases of pulmonary tuberculosis exhibit preponderance of human reaction, while in other visceral and surgical cases (in adults) the bovine reaction shows itself in $\frac{1}{3}$ to $\frac{1}{2}$ of the cases.

III. Prevention and Treatment.

As regards prevention, the *locus* of the Congress was particularly fortunate. The members speedily recognised that in the States, and especially in New York, preventive measures had been conceived and carried into execution, which rivalled anything which had been attained in most other places.

Notification.—One of the striking differences between the recent

Congress and that held in Paris in 1905 is the evident advance of public opinion in respect of the question of notification. In 1905, while many members were inclined to share the view which has been my own for twenty years, namely, that all cases of tuberculosis should be notified, the consensus of opinion did not allow the Paris Congress to go further than this—"That it is desirable that it should be the general practice to notify all cases of advanced tuberculosis."

At the Washington meeting, on the other hand, it was resolved—"That the attention of States and central Governments be called to the importance of proper laws for the obligatory notification by medical attendants to the proper health authorities of *all* cases of tuberculosis coming to their notice, and for the registration of such cases, in order to enable the health authorities to put in operation adequate measures for the prevention of the disease."

It emerged in discussion that, in the cities and countries where compulsory notification had been introduced, procedure was quite smooth, and that no difficulty of important character had presented itself. The advanced position assumed by the Local Government Board for Scotland was matter for congratulation. In this connection, the gratifying announcement was made by Dr. Newsholme that it was the intention of the Local Government Board of England to formulate an order enjoining the notification of all Poor Law cases of pulmonary tuberculosis—an order which has since been issued.

Co-ordinated Action.—The greatest difference to be recognised with regard to preventive efforts in the States, compared with those in European countries, is the realisation of the principle of co-ordination of effort, the need for, and advantage of which, it has been my lot to inculcate. In New York, more especially, the relationship between the Public Health Department and the other institutions for the relief of tuberculosis is close. The immediate link I was happy to find was the Tuberculosis Dispensary. Not only in New York, but in a number of large cities, tuberculosis dispensaries have been erected freely. In the larger cities they are numerous. In the State of Pennsylvania there are no fewer than 67 such dispensaries. Writing in the *Edinburgh Medical Journal*, I may be allowed to record the pleasure with which I learned that in principle they had been chiefly modelled on the Victoria Dispensary of Edinburgh. I was struck by the fact that the Americans had gripped the significance of the dispensary

as a great receiving centre for the varying mass of tuberculous material among the poor, as an inquiry centre in all matters with reference to tuberculosis, as a centre of medical supervision for the large body of ambulant patients who must be treated at their own homes, and as a "clearing-house" or distributing centre for such tuberculous patients as can, and should, be transferred to various hospitals, either for early or advanced cases. The tuberculosis dispensaries of the States realise the ideal of the tuberculosis dispensary more thoroughly than most of the European dispensaries. Many of the latter serve as relief-bureaus for a certain number of the tuberculous poor of the district, rather than as the centre of an organised and co-ordinated scheme. It is only by the recognition of the larger purpose and possibilities of the tuberculosis dispensary that a satisfactory advance is likely to be made in the solution of the immense problem.

There was little discussion as to the value of the sanatorium or the significance of sanatorium methods. That was taken for granted. Discussion rather turned on special aspects of the sanatorium. So far as provision of sanatoriums for the poor was concerned, the need for simplicity in construction was recognised. Having regard to the extent of the financial problem, the call for economy was emphasised. It is excellence of medical surveillance and régime rather than grandeur of site and construction which is to be aimed at. Considerable advantage is also to be obtained by a certain flexibility in the conception of the sanatorium, and the provision it affords for different classes of tuberculous persons. Thus, while a certain number of patients may be kept for a good many months with a view to complete arrest of disease, for others a shorter period may be sufficient, the purpose being chiefly educational, provided always that the patient's home circumstances allow him to continue the régime after discharge. For others still a daily sojourn at the sanatorium may be sufficient, the patient returning home at night if domestic duty makes this imperative. In yet another group of cases it may be advisable to arrange sleeping accommodation for selected patients engaged in work elsewhere during the day—one of the chief difficulties of the working-man's lot being the insanitary condition of his sleeping quarters. That such elasticity of arrangement is perfectly possible has been abundantly proved by the experience of the Royal Victoria Hospital for Consumption, Edinburgh, where the aim has been to meet the varying requirements of different classes of patients. In the States, more particularly perhaps in Boston, the

idea has been fulfilled by the development of so-called day-camps (Townsend) and night-camps (White), as is also done in Germany. The chief aim of the camp is educational. To the day-camp the patients come at 9.30 in the morning, have dinner and two lighter meals at the camp, and return home between 5 and 6 in the evening.

With reference to this aspect of prevention, the prevailing view of the Congress was voiced in the following resolution:— Resolved—"That the utmost efforts should be continued in the struggle against tuberculosis to prevent the conveyance from man to man of tuberculous infection as the most important source of the disease.

"That we urge upon the public and upon all Governments the establishment of hospitals for the treatment of advanced cases of tuberculosis, the establishment of sanatoria for curable cases, and the establishment of dispensaries, and day- and night-camps for ambulant cases of tuberculosis which cannot enter hospitals and sanatoria."

The question of physical activity in relation to sanatorium life and the treatment of pulmonary tuberculosis received considerable prominence. There was a general admission that complete rest was desirable at certain stages of the disease—when disintegration was in progress and continued absorption of toxins with corresponding evidence of intoxication (pyrexia, increased pulse-rate, and excessive waste). It was no less strongly emphasised that, with limitation of lesion and corresponding diminution of risk from local or constitutional disturbance, the call for rest was lessened or removed. The process of cure and relative immunisation is hastened by graduated activity. It was pointed out by more than one observer (Paterson, Philip, Pottenger) that there was need for careful regulation of dosage and discriminating adjustment of the activity to the individual case. Activity in excess might mean auto-inoculation in excess (Inman), with corresponding retardation of cure. Such auto-inoculation readily reveals itself by clinical evidence, *e.g.* pyrexia, increased pulse-rate, loss of appetite, malaise. It is commonly registered also by corresponding effect on the opsonic index.

For the regulation of dosage, therefore, most careful observation is necessary on the part of the physician in charge. The activity prescribed must be carefully graduated and increase of dosage only sanctioned when there is no contra-indication, or, stated otherwise, when the patient's tolerance is complete. As contra-

indication to increase, we may note especially persistent rapidity of pulse, swinging temperature about or just above the normal line, and minor manifestations of malaise. As indications for the cessation of activity and return to rest, more or less complete, may be cited pyrexia of over 99° in male, and 99·5° in the female, maintained pulse of 95 and upwards with corresponding softness, headache, undue sense of fatigue. In the absence of contra-indications, the dose may be gradually increased until the activity undertaken be as great as, or even greater than, what was undertaken by the individual in health. After sufficient trial at such level, the patient may be left commonly to guide himself, the local and constitutional damage having been repaired sufficiently, and the patient having undergone a physiological education which is not likely to be forgotten.

The recent observations at Frimley Sanatorium (Paterson) and prolonged experience at the Royal Victoria Hospital for Consumption, Edinburgh, where such methods have been in operation for a number of years (Philip), were cited in illustration of the various points. Attention was also drawn to the desirability which remained for the provision in a working colony for a certain proportion of patients, to whom, even after passage to the highest grades of physical activity, return to their previous occupation would mean relapse and consequent economic waste. It is for a selected number of such cases that the Working Colony Scheme is now in course of elaboration in Edinburgh.

For advanced and dying cases, there was a general agreement that special provision should be made in the erection of isolation hospitals. These were called for both in the interests of the patients themselves, and especially in those of the public health. As is well known, the Local Government Board for Scotland has taken an advanced position in this matter, and declared that isolation of such dangerous cases is a primary duty of the local authority.

Relation of Local Authorities and Voluntary Agencies.—In regard to the extensive field of preventive effort, it is clear that "there is abundant room, alike for official and for philanthropic effort. If it is to be effective, it is essential that the efforts be organised and harmonious.

"The official outlook—that of the State, municipalities, and other local authorities—is specially towards prevention. The philanthropic outlook is towards the cure and the relief of the individual. The two spheres are closely linked, and successful effort in the one is projected into the other.

"Within the official sphere falls especially the institution and direction of a scheme of notification. To the same sphere belongs dissemination of information in matters relating to the prevention and limitation of tuberculosis, and the practical carrying out of disinfection.

"Intimately related to this is the system of domiciliary visitation, which forms so important a part of the dispensary's activity. The dispensary thus forms a link between the tuberculous poor and the authorities. I am so much impressed with the extreme significance to the community of the various operations of the dispensary, that I believe the dispensary should either be worked by the municipality or other local authority itself, or at least be in close touch with such authority.

"The more intimate the connection the better. For a large proportion of patients, and for long periods—it may be throughout the entire illness—the dispensary will take the place of the hospital in respect of care and general direction. On this account the dispensary should be closely related to, if not an actual part of, the Public Health Service.

"To the official sphere should certainly belong the hospital for advanced and dying cases. The purpose of these hospitals is entirely different from that of the sanatorium. Such cases ought to be segregated on grounds of public health and in the interest of the unaffected citizen. This is emphatically a department of the work to which public funds are legitimately devoted.

"Within the philanthropic sphere falls naturally the sanatorium for early cases. The sanatorium exists especially with a view to the effective cure of individuals at an early stage of the disease. Sanatoriums are suitably maintained by charitable effort, by contributions of patients or of private friends interested in particular patients, by working-men's sick and benefit societies, in varying fashion, according to the varying conditions of different countries, and by local authorities, in so far as the efforts of these can extend, after due regard has been paid to the other claims which have been cited.

"Within the philanthropic sphere fall similarly extensions of the sanatorium in the direction of working colonies, after-care associations, and the like, which may be multiplied indefinitely according as the need presents itself.

"To this sphere also belong the various voluntary agencies, associations, leagues, &c., which, as the anti-tuberculosis movement extends throughout the world, serve to effect a popular propaganda until such time as the complete organisation can be attained.

"As the *motif* for anti-tuberculosis organisation becomes better apprehended, it will gradually cease to be a matter for private initiative and enterprise. Communities will be compelled to face the matter in thorough-going fashion.

"Subject to modification dependent on local conditions, a scheme of co-operative measures must be elaborated which will recognise the *rôle* and significance of public and private effort respectively. The scheme will necessarily combine the application of sanitary principles, in the broadest sense, with more direct, offensive measures against the tubercle bacillus. This implies the co-operation of public health authorities, local authorities and legislators."[1]

With regard to the economic aspect of tuberculosis, it was recognised that the burdens entailed by tuberculosis on individuals, on families, on industries, on relief agencies, and on the community generally might be greatly lightened by the attainment of effective control of tuberculosis. The State and municipal Governments and the departments of the public health were urged to participate more actively in the campaign against tuberculosis. Existing associations for the relief of sick persons, insurance and sick societies, and similar organisations were likewise invited to co-operate.

The wider aspects of prevention by increase of the resisting power of the individual and the community were not forgotten. The part played by improved sanitation in every department of life was freely recognised. It was recalled how the legislation of the past three-quarters of a century, notably in England, with regard to the dwellings of the poor, lodging-houses, workshops, factories, and other public health enactments had paved the way for the more direct attack. Through the influence of such measures the mortality from tuberculous diseases had been lessened in the same way as that from other infective conditions. The progressive decline in the death-rate in the pre-bacillus period thus found its explanation. There was a strong consensus of opinion that the housing question, using that phrase to include all considerations relating to dwellings, lodging-houses, schools, workshops, factories, offices, &c., must occupy a chief place in the preventive programme against tuberculosis.

These views were crystallised in the following general resolution of the congress:—Resolved—"That this Congress endorses such well-considered legislation for the regulation of factories and

[1] "The Anti-Tuberculosis Programme: Co-ordination of Preventive Measures." Address before the Congress, *British Medical Journal*, 17th October 1908.

workshops, the abolition of premature and injurious labour of women and children, and the securing of sanitary dwellings as will increase the resisting power of the community to tuberculosis and other diseases."

The hygiene of schools received full consideration. Much discussion took place as to the part played by school life in the production and dissemination of tuberculosis. The need for improved school hygiene and the advantages of systematic inspection of schools were generally recognised. The prevailing view was expressed in the following resolutions:—

Resolved—"That instruction in personal and school hygiene should be given in all schools for the professional training of teachers.

"That whenever possible such instruction in elementary hygiene should be entrusted to properly qualified medical instructors.

"That colleges and universities should be urged to establish courses in hygiene and sanitation, and also to include these subjects among their entrance requirements, in order to stimulate useful elementary instruction in the lower schools."

Immunity in Tuberculosis.—The problem of immunity had special attention. Interesting historical *résumés* were given of the earlier work in this department, and the gradual development of a truer conception of the significance of immunisation was traced. Commencing with the work of Pasteur and the use of attenuated organisms, it was shown how the nature of the problem had altered with increasing knowledge.

The failure of soluble extractives of tubercle bacilli to immunise was admitted. The different tuberculins and varied methods of procedure were discussed. The ascertained modification of the bacillus in passing through reptilians had aroused expectations for an adaptation of the method to the production of artificial immunity. Von Behring's bovo-vaccine, based on this conception, had been stated to be effective. Reference was made by me in December 1905 to the announcement by von Behring at the Paris Congress that he had found a curative principle in TC—the so-called "Tulase," possessed of immunising and therapeutic properties. Unfortunately, the word of caution there expressed has been fully justified. No reference was made to the announcement at the present Congress, nor indeed has anything of importance been published regarding it since 1905. This is thoroughly wrong. As I then expressed it, it is "awkward for the credit of such congresses that they seem apt to be used to exploit in

advance incomplete investigations. This sort of thing should not be sanctioned, however important the investigations may promise to become, or however distinguished the worker."

Investigations have been continued on the part of others by treating cattle subcutaneously with bovine or human bacilli (Lignières), by spacing inoculations at different intervals (Pearson and Gilliland), by the oral introduction of the vaccine (Calmette and Guerin), by the introduction of bacilli in reed capsules, sealed with collodion (Heymans), and with bacilli whose virulence has been modified by passage through other species (Klimmer). These and other lines of research go to show that cattle thus treated acquire a greater or less resistance, and seem to remain healthy for prolonged periods. They may, indeed, cease to react to tuberculin, but none the less remain carriers of bacilli and develop commonly a chronic form of tuberculosis. Unfortunately, the resistance cannot be described as complete or permanent. There still remains much to be done before we can speak of a sufficiently long-continued "immunity."

A number of questions present themselves, as, for example, What constitutes the difference between living and dead bacilli in respect of immunising value? In this respect clinical observation affords some interesting points. Thus, it is an everyday observation that local glandular suppuration seems rather to protect the patient from more extensive disturbance, if only surgical interference be not too hastily undertaken.

It would seem, therefore, that meantime we must be content to fall back on repeated protective treatment such as is afforded by various tuberculins which have been introduced from time to time. It is a query to what extent a process of local immunisation may be attempted, as by repeated feeding with, and inhalation of, the protective agent (Baldwin).

"The finer mechanism of immunity requires close study to adjust the dosage and intervals. Some way of measuring immunity is needed. A correct balance must be maintained between the special response to infection which occurs during the hypersensitive phase of immunity and the ability of the tissues to assimilate the poisons without suffering harm. An immunity, which tends only to arrest the infection, but not to overcome it, is not wholly beneficial when it creates ulceration at the portal of entrance. Hence the question whether hypersensitiveness artificially induced by protective inoculation is beneficent or otherwise must be considered. It is conceivable

that an immunity without tuberculin susceptibility may be protective. On the other hand, complete tolerance to tuberculin may be associated with a high resistance to infection in cattle. The problem thus seems to be to create tolerance for the bacillus poisons or its products when undergoing lysis, and their assimilation by the tissues. Without the unknown quality called 'tolerance' no real immunity can exist" (Baldwin).

Such observations naturally raise the query whether the tuberculous subject is at any point of the illness immune to re-infection. Certain observations (Courmont and Lesieur) would go to show that an animal in whom the evolution of artificially induced tuberculosis is in progress is incapable of second inoculation. Experimental observations are, however, not quite uniform.

The preceding remarks bear chiefly on the possibility of establishing an active immunisation, and it may be freely admitted that the outlook has its hopeful aspects. The other possibility, namely, the establishment of passive immunity, does not seem much nearer. The evidence submitted regarding the value of serum in the production of passive immunisation was chiefly negative.

Tuberculin and Serum.—A further striking difference between the Washington Congress and those of Paris and London is the place given to the discussion of the treatment of tuberculosis by specific measures. Those who have persisted in the use of tuberculin in one form or another since its first introduction by Koch in 1890, and who throughout have been satisfied of its specific efficacy, were gratified by the abundant evidence of awakened interest in the matter. While in London tuberculin was cold-shouldered, and in Paris was handled with considerable reserve, in the recent Congress it received ample hearing. Discussion turned not so much on its essential value as on the relative value of various forms, competing theories as to its mode of activity, and the principles of dosage.

The value of the various tuberculins introduced by Koch was fully attested by various contributors. They are too well known to require special reference at this stage. In addition to this, several more recent tuberculins received consideration. These included especially Béraneck's tuberculin, described previously at the Paris Congress. This tuberculin consists of (1) exo-toxins, extracted from a culture of tubercle bacilli on a medium free of peptone, and (2) endo-toxins, extracted from

the bodies of tubercle bacilli, by means of orthophosphoric acid 1 per cent. It is employed both subcutaneously and by direct focal injections, *e.g.* into joints, glands, &c. Béraneck's own statement and that of other observers who had availed themselves of the tuberculin were confirmatory as to its curative value.

Although possessed of slight toxic property, the tuberculin effects a decided reaction in tuberculous patients, as evidenced by pulse-rate, temperature, leucocytosis, &c. Béraneck proceeds on the view that tuberculin acts as a vaccine, the toxins of which, while only slightly pathogenic, stimulate the patient's defensive mechanism. He lays down two rules for its use. First, a small dose of a very dilute solution should be employed to begin with. This is especially true of pyrexic cases. Second, the same dose should be injected three or four times at least before a definite estimate of its action as a vaccine can be obtained. If the action seems favourable, the same dose may be continued for weeks or months, indeed, so long as the patient continues to benefit from the treatment. If, after three or four repetitions, the dose seems to do no good, it should be slightly increased, successive increase of dose following a carefully graduated scale. The optimum dose at a given time will be the smallest dose which is operative. The optimum dose varies necessarily in different individuals and at different stages. Béraneck recommends the exhibition of successive doses at intervals of some 3 days. He believes that the curative action of the tuberculin consists in a stimulation of the body's defences, and a reinforcement of their resistance to the pathogenic action of the tubercle bacillus and its toxins. If these are not in a condition to be favourably influenced by the tuberculin, its therapeutic results will be *nil*. Hence the importance of beginning treatment sufficiently early. While it is of more value in relation to non-pyrexic cases, febrile cases may also be treated, provided great care be taken, both in the initial and successive doses. I may add that the favourable opinion I expressed in 1905 regarding this tuberculin has been amply confirmed by large experience in its use since that date.

Calmette described a tuberculin which he has prepared for therapeutic use, and which he has labelled Tuberculin CL, which can be introduced intravenously in large quantities—as much as 50 centigrams at a single dose—into the jugular vein of a healthy

animal of the bovine species without producing any reaction. The tuberculin is obtained by centrifuging *in vacuo*, and at a low temperature, entire cultures of the bovine bacillus. The product is then filtered so as to separate the bodies of the bacilli, precipitated three times with alcohol and ether, redissolved in water, dialysed until all the precipitants and salts have been removed. The colloid substance which remains on the dialyser is then precipitated again with alcohol and ether and dried *in vacuo*. Heat is not applied, nor any other chemical process save precipitation with alcohol and ether. It is stated that this tuberculin is well borne by tuberculous patients. Treatment is commenced with very small doses, *e.g.* one-thousandth of a milligram, the dose being gradually increased by minute fractions, successive doses being given at intervals of 10 to 12 days.

Denys similarly gave further details regarding the Tuberculin FB (filtered bouillon), associated with his name. This consists of the liquid obtained by filtering through a porcelain filter a culture of the human bacillus grown to its full development on peptonised glycerinated bouillon. As in the previous case neither heat nor any chemical agent capable of altering it is used in the extraction. When injected subcutaneously in tuberculous patients, it produced (1) cutaneous phenomena—inflammation at site of puncture; (2) general phenomena—pyrexia, malaise, loss of appetite; and (3) specific phenomena—modification of symptoms. In practice, all reaction is to be avoided as much as possible. Denys recommends commencement with minute doses, and to avoid repetition of dose until all trace of even slight reaction has been absent for one or two days.

Regarding the value of the opsonic index as a gauge for measuring and controlling tuberculin injections, the prevailing view on the part of those who took part in the Congress was that, on both theoretic and practical grounds, it was less serviceable clinically than had been anticipated.

Regarding serums, the conclusions of the Congress were similar to those of the Paris meeting on the subject. Several reports were submitted regarding the use of serum, more especially Maragliano's serum. The net result of these reports was unfavourable to the line of treatment.

Much might be added regarding the transactions and conclusions of the great meeting. But the limits allowed me have been reached, and I must draw to a close. Sufficient has been

said to show that a striking advance has been made in the knowledge of tuberculosis since the Paris Congress of three years ago. During the interval, much new ground has been broken, and there has developed a remarkable consensus of opinion as to the more likely lines of observation and the realisable measures of prevention and treatment.

Throughout the session of the Congress I was immensely struck with the unity of purpose, keenness for action, and common sense which were manifested. Since the London Congress of 1901 there has been a great deepening of interest and the production of a juster and larger conception, both of the issues involved and the means required to meet these. Many questions remain unsolved, but, in respect of most, the ground has been cleared and the points at issue defined. There is excellent reason to hope that during the three years which will elapse before the Tuberculosis Congress meets again some of the problems which at present seem obscure will have been solved.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

A MEETING was held on 3rd March, Dr. James Ritchie, President, in the chair.

Mr. Dowden showed a man six and a half years after removal of an epithelioma of the lip and adjacent glands. There had been no recurrence. Mr. Dowden also showed a man nine months after intra-scapulo-thoracic amputation for recurrent sarcoma of the deltoid. A painful neuroma had been recently excised, and it was then noticed that the subclavian artery had shrunk to the size of the radial.

Mr. Thomson showed two cases of internal derangement of the knee-joint in which diagnosis and treatment could not be completed until the joint had been freely opened up by division of the ligamentum patella. One case was found to be due to tearing of the posterior end of the semilunar cartilage, the other to a fringe from the anterior crucial ligament. Perfect recovery followed in each case.

Mr. Thomson also showed a girl who, as a result of an extensive burn, had acquired an extreme degree of flexion of the elbow and wrist.

These joints were resected, the bones were shortened, and a large flap taken from the abdominal wall was inserted on the flexor aspect.

The limb had greatly improved. Innervation of the flap was recovered in two and a half months.

Dr. Edwin Bramwell read a paper on the "Problem of the Sane Epileptic," which will appear in a subsequent number of the *Journal.*

Dr. Crawford Dunlop said that an epileptic colony was not a matter to be undertaken lightly. The great danger which arose was that insane persons were sent to them as epileptics. In epilepsy there was a tendency to mental defect and a corresponding tendency for dements to accumulate in epileptic colonies. An epileptic colony should be part and parcel of the lunacy administration.

Dr. Byrom Bramwell said that neurasthenia and epilepsy were the most common nerve diseases. Many epileptics were absolutely sane. These could not find work and they might live twenty or thirty years. They were thus different from cases of chronic Bright's disease, phthisis, and other cases which were treated in poorhouse hospitals, and special means were required to deal with them. If epileptic colonies drifted into the position of unlicensed asylums, that was the fault of the administration of the colony and not of the system.

Drs. Affleck, Burn Murdoch and Wm. Russell warmly approved of the views put forward by Dr. Edwin Bramwell and agreed in thinking that Dr. Dunlop's remarks had pointed out the direction in which abuses would require to be guarded against.

Mr. Alexis Thomson read a paper on the "Diagnosis and Treatment of Chronic Ulcer of the Stomach and Duodenum," based on a consecutive series of fifty cases in which a chronic ulcer was demonstrated at the operation. The ulcer was situated in the pyloric ring or antrum in sixteen cases (32 per cent.), in the lesser curvature in twelve (24 per cent.), and in the first part of the duodenum in seventeen (34 per cent.). It was estimated that 95 per cent. of ulcers occurred in the so-called anterior wall of the stomach and duodenum. The gastric ulcers were equally divided between the sexes, the duodenal in the proportion of eighteen males to four females. Pain was most marked in ulcers situated near the lesser curvature, and next to this those in the region of the pylorus; pain was absent in a number of duodenal ulcers, many of these exhibiting a latency which caused great difficulty in diagnosis. The site of the pain was too variable to permit of its being relied upon as a guide to the seat of the ulcer. In some of the duodenal ulcers the pain occurred at intervals of several days in the form of crises like those associated with affections of the gall-bladder. Doubt was expressed of the view that the pain of chronic ulcer was due to contact with the acid contents of the stomach. It was pointed out that the recent acute ulcer would react most to this acid contact, whereas the evidence tended to show that the ulcer which causes the greatest amount of pain is the chronic ulcer, with widespread callous infiltration and peritoneal adhesions, the type of ulcer that would most interfere with the peri-

staltic movements of the organ. The complete absence of free hydrochloric acid in four cases in which pain was a prominent feature lent support to the view that the pain is due to the movements of the stomach and not to the acidity of its contents. The violent crises of pain in duodenal ulcer were ascribed to cramp-like contractions of the muscular coat. Doubt was also expressed in the explanation currently given of the hunger-pain of duodenal ulcer, but Mr. Thomson was inclined to ascribe it to traction on the duodenum rather than to contact with acid material derived from the stomach.

The treatment of chronic ulcer was essentially surgical: resection of the ulcer combined with gastro-enterostomy was the ideal method. On account of the danger and difficulty attending resection, gastro-enterostomy was regarded as the routine method to be adopted.

Results of Operation.—Resections of Stomach.—Three cases with one operation death. Of the survivors, one is perfectly well three and a quarter years later; the remaining one is well two and a third years later, but has occasional pain and flatulence.

Gastro-Enterostomies.—Forty-seven cases with three operation deaths, a mortality of 6 per cent. The deaths occurred in the early members of the series, before the technique of the operation was established. Two were due to a bad form of vicious circle and one to septic peritonitis. Of those who survived the operation, one, a tramp, was lost sight of; five died at various periods—one of exophthalmic goitre, one of cancer of the stomach, already referred to, one of urinary sepsis associated with enlarged prostate, and two of what was reported by their doctors as acute enteritis. It is just possible that this may have been perforation of a peptic ulcer of the jejunum.

The remaining thirty-eight are all under observation. They all describe in enthusiastic terms the benefits derived from the operation; there is an increase of weight, and in individual cases this amounted to two, three, and even four stones; there is complete freedom from the pre-existing gastric symptoms, a healthy appetite, a capacity of eating and enjoying everything, and, finally, a regular action of the bowels without medicines. There was no discoverable difference in the results, whether the operation had been performed for ulcer of the lesser curvature, for ulcer at or near the pylorus, or for ulcer in the duodenum. Even cases with extensive adhesions and the four cases of hour-glass stomach all fall to be included in this group of ideal results. Three of the women have since borne children; there was only a moderate amount of sickness during the later months of pregnancy. One of the male patients passed easily through an attack of typhoid fever.

Professor Caird referred to the difficulty of interpreting the symptoms of duodenal ulcer. He was in agreement with Mr. Thomson as to the difficulty of resection and the good results following gastro-

enterostomy. He had been very much struck by the welcome given to this operation by physicians.

Mr. Cathcart said he had actually seen on the operation-table the intense spasm which Mr. Thomson had referred to as a cause of pain. He thought that sepsis might account for intermission and recurrence of symptoms.

Dr. F. D. Boyd, C.M.G., said that there was a good deal of clinical evidence against spasm being the entire explanation of pain. Pain could generally be relieved by giving an alkaline mixture, and was often caused by rectal feeding.

Dr. Affleck referred to the uncertainty of symptoms in gastric and duodenal ulcer. An ulcer might cause pain in the iliac fossa or region of the scapula, and there might be pain in the usual site when no ulcer was present. Sometimes pain was increased in the process of healing. Chronic ulcers did heal, but their usual course was to persist.

Dr. Byrom Bramwell asked why the incidence of gastric cancer in case of ulcer was thought so common by surgeons and so rare by pathologists.

Dr. Wm. Russell said the real difficulty lay in the diagnosis of chronic ulcer. Granted a chronic ulcer, no one doubted that gastro-enterostomy relieved it. Pain might be due to spasm, but he thought chemical stimulation was the determining factor.

Edinburgh Obstetrical Society.

THE fifth meeting of the session was held on Wednesday, 10th March 1909, Professor Stephenson in the chair. Specimens were exhibited by Dr. Haig Ferguson and Dr. Wm. Fordyce.

Dr. Berry Hart read a paper on "The Interpretation of the Porro Uteri in Relation to the Third Stage of Labour."

Sir Halliday Croom read notes of a case of post-partum eclampsia treated successfully by decapsulation of the kidneys, and Dr. Oliphant Nicholson read a paper on "The Physiological Basis for Decapsulation of the Kidney in Eclamptic Anuria." These papers will appear in a subsequent number of the *Journal*.

Glasgow Medico-Chirurgical Society.

FRIDAY, 19th February 1909, Dr. R. Jardine in the chair.

A discussion on "The Treatment of Suppurative Appendicitis" was introduced by Sir George T. Beatson, K.C.B., Dr. T. Kennedy Dalziel, and Dr. Donald M'Phail.

The point chiefly at issue and round which the discussion chiefly

centred was as to the time to operate in cases of appendicitis with abscess. Sir George T. Beatson advocated strongly that such cases should be left until firm adhesions had had time to form and till the patient had settled down after the early days of abscess formation. He considered that the success of early operation in non-suppurative appendicitis was no ground for early operation in the suppurative variety. Various statistics were produced which he held supported his plea, in so far that his total death-rate was less than that of surgeons who practised early operation.

Dr. Dalziel was opposed to this teaching, and held that in this as in other regions when pus had formed it was the surgeon's duty to evacuate the abscess. He held that the risks of perforation into the general peritoneal cavity or elsewhere were too great to warrant delay, and he did not think that the death-rate in early operation was any greater than in the delayed operation. On the whole, the other speakers supported Dr. Dalziel's views, believing that early operation was indicated in cases of appendicitis with abscess formation.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By JOHN D. COMRIE, M.A., B.Sc., M.B., F.R.C.P.,
Lecturer on the History of Medicine, Edinburgh University.

CONSIDERABLE attention has been directed of late to the occurrence of jaundice, accompanied by peculiar changes in the blood and enlargement of the spleen, among infants, often throughout several members of one family. As regards infants, this appears to be a peculiarly fatal disease, most of those affected dying within a week of birth. Some live for a few weeks, and occasionally an infant, whose blood has shown the most extreme anæmia, and whose skin has been profoundly jaundiced at birth, becomes quite normal in both respects and recovers completely after some weeks. A condition in which the blood changes are very similar, and in which jaundice is constantly present, has also recently been described as a permanent condition in adults, occasioning very little trouble, and probably due to similar pathological changes.

Many cases of fatal jaundice in the newly-born were recorded, prior to the period when careful blood-examination came into vogue, under such names as family icterus, congenital icterus with tumour of the spleen, acholuric icterus, hereditary icterus and family cholæmia. For example, Arkwright[1] published a short account of a family in which

this condition was apparently responsible for the death of 10 children. The first in a family of 15 was not affected; all the others were born jaundiced, and, while the second, fourth, fourteenth and fifteenth recovered, the remainder died mostly within a few days of birth.

Auden [2] mentioned the case of a healthy mother of 38 years who had had 12 pregnancies as follows:—1, male, healthy, never jaundiced; 2, male, born jaundiced, died in 5 days; 3, female, born jaundiced, died in 5 days; 4, miscarriage; 5, female, jaundiced at birth, recovered; 6, male, jaundiced, died in 6 days; 7, female, jaundiced, died in 6 days; 8, female, jaundiced, died in 8 days; 9, miscarriage; 10, still-born; 11, female, jaundice appeared after birth, died in 3 weeks; 12, jaundice came on after birth, died in 3 days.

Ashby and Wright [3] adverted to a family in which the first two infants remained alive and well, while the third, fourth, fifth and sixth died with jaundice between the ninth and the eleventh day after birth.

Busfield [4] similarly recorded a family in which a healthy young woman, during the course of 16 years, had children as follows:—1, male, healthy; 2, female, jaundiced, recovered; 3, 4, 5 and 6, born jaundiced and died; 7, female, born intensely jaundiced, recovered; 8, male, born intensely jaundiced, recovered; 9, male, jaundiced, died in 4 days; 10, female, jaundiced, died in 4 days.

Buchan and M'Gibbon [5] recorded in full the examination of the blood in the case of a child that recovered; and Buchan and Comrie [6] give the results of blood-examinations and of post-mortem examinations in 2 cases that died out of this family, and similar records from 1 child of another family. In the former family, child 1, male, was always healthy; child 2 was jaundiced at birth, had enlargement of the spleen, and peculiar blood characters, but made a complete recovery; while child 3 and child 4, born jaundiced, with enlarged spleen and similar blood condition, both died before the age of 1 week. In the second family there had been 8 healthy children, while the ninth showed the same characters of jaundice at birth, enlargement of the spleen, peculiar blood, and death within a week. The general condition of the blood in all 4 cases was—Anæmia, with a red corpuscle count of 2,000,000 to 3,000,000, marked polychromatophilia, and the presence in enormous number of nucleated red corpuscles, chiefly megaloblasts; the white corpuscles also markedly increased, with numerous myelocytes and phagocytes cells containing red corpuscles or granules. Post-mortem there were found to be indications in the liver and bile-ducts that the jaundice was due to obstruction, though of a temporary nature; the bone-marrow, and still more the liver of each case showed an increase of hæmogenetic tissue amounting to 10 or 30 times that normally present at birth; the spleen in the 3 cases was enlarged and crowded with phagocytes containing granules derived apparently from the remains of red blood corpuscles; there were well-marked changes in

the thyroid gland also, but the other organs showed little abnormality. The writers conclude that this disease has no connection with syphilis, nor probably with any infective condition, but that it may be due to some inherent fragility of the red corpuscles, which causes their lysis from the cholæmia, or due to the production of some metabolic hæmolytic substance; the peculiar blood characters they regard as due to a hurried attempt at red cell formation.

Closely resembling these cases are 4 in young adults recorded by Hawkins and Dudgeon.[7] In one of these a policeman, aged 27, had all his life been jaundiced and had a large spleen; two sisters, aged 11 and 13, had also jaundice and enlarged spleen dating from infancy; so had a boy, aged 7, from another family. In these cases there was an average blood-count of 3,090,000, with marked polychromatophilia, poikilocytosis and the presence of normoblasts and megaloblasts. The patients, however, had no special symptoms of disease beyond their objection to the colour of the skin. The writers found that there was present an increased fragility of the red cells, as tested by mixing the blood with sodium chloride solutions of varying strength.

Pollak[8] records the case of a girl, aged 8, who showed similar characters—viz. jaundice since birth, swelling of the spleen, red blood corpuscles 3,200,000, with polychromatophilia—in whom the hereditary character was very evident, the mother and grandmother being similarly affected. Pollak mentions having seen 3 cases of a like nature in adults.

Chauffard[9] records a case in a young man of 24 jaundiced from birth, with a red cell count of 3,800,000 and myelocytes in the circulating blood. In him, also, there was fragility of the red cells, as tested by chloride of sodium solutions. Vidal and Abrami[10] also refer to 2 cases of congenital icterus with fragility of the red blood corpuscles.

These 2 series of cases, showing a similar condition of the blood, with enlargement of the spleen and jaundice in infants and in adolescents, are presumably allied in pathological nature, though those occurring in very young children are apt to be fatal, while those that have persisted to adolescence or to adult life give rise to very little inconvenience. The condition as it affects infants has been confused, on the one hand, with the *anæmia pseudo-leukæmica infantum* described by von Jaksch,[11] in which, however, there is no special change, beyond some diminution of numbers, in the red corpuscles, the chief alteration being in the white cells. On the other hand, it has not been differentiated sharply enough from splenic anæmia, which also occurs both among very young children and adolescents. Numerous cases of the disease affecting the latter have been recorded, *e.g.* 15 cases by Osler,[12] 35 cases by Rolleston,[13] 2 cases by Cowan,[14] in which very serious ill-health was present, with decrease of both red and white corpuscles,

the presence of erythroblasts and myelocytes, enlargement of spleen and liver, but no jaundice.

Numerous cases of splenic anæmia in children have been recorded, *e.g.* by Fowler. These may occur in families, as the 6 cases from one family recorded by Springthorpe and Stirling,[15] though in general they are isolated. This disease in children comes on during the course of the first or second year; in rickety subjects the liver and spleen are enlarged, there is severe anæmia with polymorphism and the presence of myelocytes and mast-cells, together with leucocytosis in the blood. The condition is ascribed by Hutchison[16] to a species of intestinal auto-intoxication. It will be readily seen that this is quite a different pathological entity from the condition mentioned above as recorded, described among infants by Auden, Busfield, Buchan and Comrie, &c.

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RECENT JOURNAL LITERATURE DEALING WITH VACCINE THERAPY AND OPSONINS CHIEFLY IN RELATION TO TUBERCULOSIS.

By DAVID LAWSON, M.A., M.D., F.R.S.E.,
Senior Physician to the Sanatorium at Banchory.

So great has been the sovereignty wielded by Koch over the mind of the medical world, that for well-nigh 20 years his dicta have been accepted without question. In the irony of things it was by an act of his own that this remarkable spell was broken. The historic announcement which he made at the meeting of the International Tuberculosis Congress in 1901 contributed to this end, for it led to the appointment of Commissions on the part of the English and

German Governments, and, as is now well known, the findings of these bodies were against him. Koch, himself, has since admitted that he no longer strictly adheres to the position he then took up. In this way his prestige has suffered, and in consequence his authority became impaired. Thus it has come about that many inquirers after truth, too timorous in the past to call in question any saying of the master, have since taken courage and proceeded to put to the test other dicta which have fallen from the great man's lips. Undeterred by the statement made by Koch 25 years before that tuberculin orally administered was inert, Hort has been administering staphylococcal vaccine, and also T. R. tuberculin by the mouth, and has shown, to his own satisfaction at all events, that very definite local and constitutional changes follow the exhibition of tuberculin in this way. When we recall the fact recorded by Copeman as far back as 1810, that a simple oral administration of vaccinia and variola crust produced 180 vesicles, all of clearly vaccine type, the wonder is that Hort's re-discovery has been so long delayed. At first it attracted little attention. Recently, however, it has received fresh emphasis by the publication of a remarkable paper which was read before the Royal Society of Medicine (London), by Latham and Inman, and in this paper the writers adduce very strong clinical evidence in support of Hort's claim that tuberculin and antitoxic sera in general may be given safely and with advantage per os.

If a serum produces a therapeutic action when given by mouth, should it not likewise do so when administered per rectum seems a natural question to ask. Fornario immunised guinea-pigs against plague; Breton and Petit against tetanus by rectal administration of antitoxin. Even if the absorptive power of the rectal mucous membrane is not particularly high, the action of the ascending currents of the bowel, which have been known to reproduce in a colotomy wound the pigment of a carmine suppository previously inserted into the rectum, should carry substances up to a point in the intestinal tract, where the absorptive power is admittedly higher than it is in the rectum.

Parkinson, it now appears, has been giving antitoxic sera per rectum for nearly 6 years, and, in an article published in May 1908, declares himself fully satisfied with the results obtained. The technique of his method is simplicity itself. Without even troubling to give a preliminary cleansing enema, he simply passes a No. 6 Jacques catheter into the rectum of the patient previously placed on his left side, and attaches to this a glass urethral syringe by means of which he injects the serum. We may therefore take it that in administering antitoxic sera we are now no longer restricted to the hypodermic methods of administration, but may do so by mouth or rectum.

Passing from a consideration of the methods of administration to that of the methods of controlling vaccine therapy, we enter upon more

controversial ground. In some respects Wright's position resembles that of Koch. Both began by overstating their case, and both have, in a measure, been obliged to climb down. And when we have said this we have said the worst. There remains to the solid credit of each worker a great and lasting and permanent achievement with which their names will be for ever associated in the minds of a grateful posterity.

Wright's action in the earlier days of referring in a spirit of playful and patronising banter to the orthodox methods of treatment which had been slowly and laboriously acquired by the work of successive generations of painstaking and conscientious practitioners in medicine and surgery was bound to provoke attack. Surgeons could hardly be expected, at the call of the distinguished pathologist, to immediately bury their scalpels and assume the unexciting and unremunerative *rôle* of immunisators in the new heaven and the new earth about to arise under this opsonic régime which was to be. Being merely human, instead of doing so, along with others they set themselves to find out the vulnerable points in Wright's claims, and they succeeded; for they are many. The fallacy of spontaneous phagocytosis, so difficult to eliminate; the capricious behaviour of the leucocytes; the uncertain personal factor in the counting of the slides; the existence of clumping; the easily demonstrable fact that a high index does not always correspond to high resistance (Struthers Stewart and myself 3 years ago recorded two cases of high indices occurring within 24 hours of death) have become powerful weapons in the hands of the enemy. True it is, the experience of those joining in the attack is for the most part slender when compared with that of those whose work and claims they seek to assail. A fortnight spent at St. Mary's learning the technique at the hands of the assistants of the man against whom their efforts are destined to be directed, followed by 3 months' work on selected cases—usually for an M.D. thesis—has been considered by many a sufficient qualification to justify them in entering the lists against those whose silent, solid, massive work extending over years supports the claims which are made on behalf of opsonic index as an agent of control. The number of those who have followed this line are legion. They need not even be named. Two alone merit recognition as showing how far such critics may go. Reyn and Kjer-Peterson go so far as to doubt the existence of any appreciable difference between the opsonic index of the blood in health and disease. True, they may have found it so. Their position reminds one of the Irishman—asked by the judge if he had anything to say for himself, in view of the fact that four witnesses had sworn that they saw him commit the crime with which he stood charged—who replied, "Quite right, your honour, but if your worship will give me the chance I can bring four hundred witnesses who did not see me do it." There will never be

wanting investigators of comparative inexperience in the working of this difficult and complicated technique, whose results will not coincide with the conclusions arrived at by infinitely more experienced workers in the same field. For our part, we are with those who find in systematic opsonic observation within limits a reliable guide to the administration of sera.

Two broad facts remain ; the most powerful and persistent advocates of the value of systematic opsonic observations, as the best method of controlling dosage in vaccine therapy, are those who have done most practical work at it ; and, secondly, each succeeding year, hostile criticism notwithstanding, shows an extension of the application of vaccine therapy worked in association with opsonic control to diseases of medicine and surgery.

But there are other methods of gauging the action of sera besides exhibition of the opsonic index.

Lloyd Smith and Radcliffe find the agglutination index practicable, but as it shows no superiority over opsonic index, and in some respects is its inferior, they have abandoned it.

Hort suggests that the antilytic index, in as much as it furnishes us with an indication of the tendency for tissue to break down under disease, is a more reliable guide than the opsonic index. But in so far as up to this time we are dependent entirely upon Golla's extremely technical and difficult mode of estimating this index by employing electrical conductivity, it is not likely to engage the serious attention of busy practitioners for some time to come.

A much more likely method to come into general use is what may be called the clinical method. Two years ago Gray of Aberdeen speaking in this connection emphasised the practical difference between an open surgical wound and a closed form of disease such as renal or pulmonary phthisis. He found that, so far as one could see by the naked eye changes for better or worse taking place in a wound following vaccine treatment, one had there a guide to treatment equally reliable and certainly more convenient than the opsonic index. His subsequent experience which has been recorded confirms this view.

Paterson and Inman at Frimley, and more recently Latham and Inman at Brompton, endeavour to extend the application of the "clinical" guide to medicine. They have found the opsonic index varying so consistently with the clinical symptoms, in particular with the temperature which, however, moved in a direction inverse to that of the opsonic index curve, that, except for occasional use when in doubt, they are disposed to relinquish the opsonic in favour of the clinical guide. Struthers Stewart and myself, I may observe, arrived at quite a different conclusion, as may be found in referring to our paper published in 1905. But in so far as our observations were made on apyrexial cases, and Latham's have been worked out on pyrexial cases, probably the inferences are not comparable.

Without in any sense presuming to exhaust the very lengthy list either of the vaccine agents which have been successfully employed, or of the diseases against which they have been directed during the past twelve months, one may endeavour to record some of the more outstanding and important of their number.

Taking, first, tubercular disease in this connection, undoubtedly premier position must be accorded to the work of Paterson and Inman at Frimley. Wright conceived the idea of treating disease by means of a vaccine made from a culture of the pathogenic organism causing the disease. Paterson dispenses with the armamentarium of the laboratory, and treats his consumptive patients by means of the vaccine elaborated within the patient's own body. His is strictly home-grown. The striking results thus obtained by securing for the patient a proper supply of his own vaccine—self-administered—by the simple procedure of regulating his exercise forms one of the most striking and valuable pieces of work of recent time.

In a country where cow's milk as an element of human food is debarred, one would scarcely look for suggestions as to the treatment of tubercular disease. Still Japan has not been idle. Ishigami has been patiently working at Hamadera Osaka since 1897, and has succeeded in isolating two substances—one a chemical substance which he calls tuberculo-toxoidin—the other an immunising serum. They are applied either orally or hypodermically, and out of 160 patients so treated he claims to have obtained nearly 44 per cent. of complete cures.

Readers will remember the high hopes raised by what is now regarded as the indiscreet and premature announcement of Behring, when he told us he had succeeded in discovering a serum likely to achieve great success in the treatment of tuberculosis. We search recent literature for a record of the achievements of tulase as a remedial agent, but we search it in vain. Collin alone makes any contribution to the subject. He spent several weeks with von Behring at Marburg, and then proceeded to apply the knowledge so acquired in von Michel's ophthalmic clinic in Vienna. Nothing is claimed by them on behalf of tulase in the treatment of widespread disease, but on localised tubercular processes of the eye they believe that it exercises a specific influence. Without claiming to have cured any case in which it was used, they plead for a wide trial of tulase in local forms of tuberculosis.

The opinion of anyone who has acted as assistant to Koch is at least entitled to consideration. It is chiefly on this account that we quote Spengler's latest fad, otherwise we should have been disposed to pass it by, along with the usual annual popular transient fashion of Davos and such reputed resorts. He tells us that in indicating the blood serum as the place of storage of antitoxins and antibodies Wright is quite wrong, for they are really stored in the red cells. He brings

forward a substance he calls JK, which is supposed to possess high lytic properties. Inoculated subcutaneously it acts by liberating these curative substances and placing them at the disposal of the host.

Private reports received from Switzerland by the writer early in the winter spoke of rapid marvellous cures of old-standing and acute cases of phthisis alike produced by JK. Patients who have had it, and their friends now write in chilling terms. But it formed a nine days' wonder.

Some tell us that in selecting healthy bullocks and cooking the meat of such for table for our tuberculous patients we are making a great mistake. What we ought to provide is the meat of tuberculous animals, and our patients ought to have it raw. In this way only can they hope to benefit by the antibodies elaborated and stored in the affected animals' blood stream, in response to the action of the disease from which they are suffering. If they must be affected animals that are used, then we may be excused, we hope, for expressing a preference for the serum only of such animals administered hypodermically, as is being done by Nathan Raw at Liverpool. We shall be quite prepared to reconcile ourselves to the loss of some of the protective substances whose home may be in the muscle and not in the blood.

Outside of tuberculosis the recorded cure of a case of actinomycosis of the lungs and pleura by vaccine treatment is undoubtedly the most striking advance noted during last year. This is the more notable when we recall the fact that such is the vitality of some forms of the streptothrix that Nukoyama has placed it on record that he has recognised the parasite growing out of a cell which had ingested, and was presumably endeavouring to digest it. The case is reported very fully by Wynn of Birmingham in the *British Medical Journal*, 7th March 1908, to which readers are referred for further details. It may be sufficient to say that the writer succeeded in growing a culture from the pus and preparing a vaccine which he called actinomycin. This he administered hypodermically and controlled the dosage by opsonic observations. Six inoculations altogether were given, extending over a period of 3 months, and the patient, to all appearances, made a complete recovery. Twelve months after discharge he reported himself still sound in health. The importance of this case from the opsonist apologist's point of view can hardly be over-estimated. Furthermore, it adds one more to the growing number of infections, and this an infection which previous experience had taught one to regard as hopeless, which have been successfully treated by vaccine therapy in conjunction with opsonic methods.

In the space remaining one can only mention a few other forms. In the pulmonary form no advance has taken place in vaccine treatment of pneumococcal disease, but a wonderfully good case of recovery

is recorded by Magruder of a patient suffering from pneumococcal abscess of the middle ear.

A large number of streptococcal and staphylococcal infections have been successfully treated. One of the most remarkable of these is the case of chronic acne vulgaris of 20 years' standing which yielded to vaccine treatment at the hands of Miller of Glasgow. Common colds, bronchitis and asthma have all been treated by vaccine therapy, and it is claimed have been so treated with great success.

In reviewing the literature as a whole one is struck by the almost entire absence of constructive work attempted by American and continental investigators. Their efforts seem to be devoted entirely to destructive criticism. In the sphere of practically applied vaccine therapy Britain continues to easily lead the van.

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SURGERY.

By ALEXANDER MILES, F.R.C.S.,
Assistant-Surgeon, Royal Infirmary, Edinburgh.

Post-Operative Pulmonary Embolism.

Post-operative pulmonary embolism has recently attracted a considerable amount of attention, but little is known regarding its causation. In severe injuries of the lower extremities, or in diseases of the blood and blood-vessels, the transmission of a thrombus formed in the venous system towards its terminus, the pulmonary artery, is easily understood, and at the autopsy evidence of this is usually obtained. It is different, however, when it occurs in vigorous patients after a simple operation for hernia or for recurrent appendicitis. No clotting beyond what is necessary for the process of repair can be found at the seat of operation. In such cases the theory has been advanced that the clot extends to the pulmonary artery from its primary situation in the right heart. If so, it is not yet understood why such a thrombosis should occur in a robust person after a few days in bed. At the German Surgical Congress of 1908, various etiological factors were suggested—the anæsthetic, the concentration of the blood from loss of water during the operation, infection from the wound or the intestinal canal, dilatation of the saphenous vein favouring thrombosis there, and others. But Gibson (*Med. Rec.*, 9th January 1909), in a survey of the reported cases, finds only two factors with an etiological bearing—the age of the patient and the site of the operation: the great majority of the patients were between forty and sixty; the location of the operation was always below the belt.

Regarding immobility and confinement to bed after operation there was a singularly unanimous expression of opinion at the German Congress that this was not a causative factor, and that patients should be kept in bed for a fortnight at least after a laparotomy. The condition most frequently occurs in the first week (60 per cent.) and second week (29 per cent.) after operation, but it may occur after the patient has been going about for some weeks. Most of the deaths have taken place within forty-eight hours after the operation, the symptoms lasting from ten minutes to half an hour.

Several suggestions have been made to guard against the accident—massage of extremities, free movements of left leg, early purgation, cardiac stimulation; but the value of such measures cannot yet be estimated. Trendelenburg has recently attempted the removal of the clot from the pulmonary artery (*Zentr. f. Chir.*, 1908, Nos. 4 and 35).

Subphrenic Abscess following Appendicitis.

An exhaustive review of the published cases of subphrenic abscess of appendicular origin is given by Lance (*Gaz. des Hôpitaux*, 16th and

23rd January 1909). From the statistics of almost a thousand cases, he finds that over 20 per cent. are due to appendicitis, over 30 per cent. to gastric and duodenal ulcer, 13 per cent. to lesions of the liver and gall-bladder, and the remainder to conditions affecting the pancreas, spleen, large intestine, pleura, &c. It occurs in 0·5 per cent. of all cases of appendicitis, in 1·33 per cent. of those requiring operation, and in 3 per cent. of suppurating cases. The abscess generally appears as a post-operative complication (66 per cent.).

Rarely the infection is carried to the liver by the portal vein, and the subsequent bursting of a superficial liver abscess gives rise to the condition. As a rule, however, the spread is a continuous one, either by the cellular tissue and lymphatics or by the peritoneum. In the former the appendix is most commonly posterior and directed upwards, and the infection extends retroperitoneally behind the kidney. The right side of the diaphragm is affected throughout its whole thickness, and is frequently perforated. In 60 per cent. of such cases the abscess is associated with empyema. In the intra-peritoneal spread, the infection may travel along the outer side of the ascending colon (Robinson's parieto-colic sinus) or its inner side. When the appendix is low down and a pelvic abscess is formed, it may follow the inferior surface of the mesentery or the left border of the descending colon, giving rise to a left subphrenic abscess. Finally, a right or left abscess may remain in this situation after a generalised peritonitis. Lance's statistics show in five cases a spread by the portal vein, in forty-one by the lymphatics and cellular tissue, in fifty-two by the peritoneal cavity.

The onset of the disease may occur during an attack of appendicitis, or as long as six months after. It is usually sudden and is characterised by stabbing and shooting pains, fever, vomiting and rigors. Occasionally the abdominal symptoms are absent, and the first signs are of empyema. The abscess may evacuate through the original incision, into the pleura, lung, pericardium, peritoneum or transverse colon. It shows no tendency to open on the surface.

Extra-Vesical Suprapubic Prostatectomy.

Van Stockum has recently described his operation of extra-vesical suprapubic prostatectomy (*Zentr. f. Chir.*, 9th January 1909). Through a vertical mesial incision a finger is passed behind the symphysis pubis to define the anterior surface of the prostate and the beginning of the urethra. A sound previously passed is a useful guide. Then the anterior surface of the gland is bared over a limited extent, and a small vertical incision made in the capsule at its upper end. With two fingers inserted through the incision the prostate is enucleated as in Freyer's operation, and the cavity is packed with gauze. In his first two cases Van Stockum has purposely opened the bladder and drained it through

the wound, but he hopes to dispense with this in future, and merely leave a catheter *in situ*. He considers that the neck of the bladder suffers less damage by the extra-vesical method, and drainage by the catheter will not be rendered inefficacious by the formation of clots.

OBSTETRICS AND GYNECOLOGY.

By A. H. F. BARBOUR, M.D., LL.D.,
Lecturer on Gynecology,

and

B. P. WATSON, M.D., F.R.C.S.,
Gynecological Tutor, Edinburgh University.

The Time to Operate in Tubal Pregnancy.

During the past year a prolonged discussion has been going on in the American journals as to which is the best time for operative interference in cases of tubal pregnancy, and more particularly in those in which rupture has taken place with intra-peritoneal hæmorrhage. In May of last year the American Gynecological Society discussed the subject of "Immediate *versus* Deferred Operation for Intra-peritoneal Hæmorrhage, due to Tubal Pregnancy," and papers were read by Frederick, Montgomery, Simpson, Manton, Lapthorn Smith, Boldt, Baer, King, Janvrin, and others, while Martin of Greifswald and Pfannenstiel of Kiel took part in the discussion (*American Journal of Obstetrics*, July 1908). There were certain points on which there was practical unanimity among the speakers. All agreed that in many cases a diagnosis of tubal pregnancy could be made before rupture. Given a history of amenorrhœa, of irregular crampy pains in the lower abdomen, with or without slight, intermittent vaginal hæmorrhage, and the presence of a definite swelling to one side of a slightly enlarged uterus, the diagnosis of tubal pregnancy is practically certain. In such a case the treatment ought to be laparotomy and removal of the pregnant tube before symptoms of rupture appear. The operation can be done at the time of choice and under the best conditions as regards preparation of the patient and asepsis.

In the second class of case where there has been a partial rupture of the tube or an attempt at tubal abortion, as evidenced by severe spasms of abdominal pain accompanied by faintness and some pallor indicating internal hæmorrhage, all were agreed that, while operation is the only rational treatment, there is no immediate hurry. The patient, provided she is under constant observation, may be allowed to recover from the immediate shock while suitable preparations are made

for the operation either in a hospital or in her own home, which latter is preferable in most cases, as any moving of the patient may set up fresh bleeding. In such a case some of the operators delayed operation for weeks, but the majority preferred opening the abdomen within a day or two, for the reason that the operation is easier then, and involves less risk to the patient than when undertaken at a later period after adhesions have formed and possibly fresh hæmorrhage has occurred.

The chief divergence of opinion occurred in those cases of complete rupture of the tube with large intra-peritoneal hæmorrhages in which the symptoms occur suddenly, reducing the patient to a state of profound collapse and anæmia in a very short time. Ought such a case to be operated on immediately, or ought the operation to be deferred in the hope of the patient recovering from the initial shock and being in better condition later to stand the operation? Which constitutes the greater risk to the patient, the possibility of the hæmorrhage continuing, or the addition of the shock of operation to that already present? Statistics on the subject are contradictory. Frederick said that in his experience only 5 per cent. of tubal pregnancies are accompanied by hæmorrhage to the danger of life at the time of primary rupture. Lapthorn Smith, on the other hand, quotes Schauta's statistics from Vienna showing that as the result of operative interference the mortality of tubal pregnancy has been reduced from 87 per cent. to 5 per cent. Some of the speakers quoted cases in which an initial hæmorrhage had proved fatal, and most gynecologists have met with such. The advocates of the deferred operation held that the fatal result is due, not to hæmorrhage, but to hæmorrhage plus shock. Robb especially supported this view, holding that a patient cannot lose sufficient blood into the peritoneal cavity to cause death. The raised tension inside the abdomen and lowered tension in the circulation are sufficient to arrest bleeding before a sufficient quantity—3 per cent. of the body weight, according to physiologists—is lost. He based these conclusions largely on a series of experiments he performed in bitches (*Amer. Journ. of Obst.*, October 1908), in which he cut the uterine and ovarian vessels and closed the abdomen without ligaturing them. The bleeding was spontaneously arrested and the animals recovered. The conditions in his experiments and those obtaining in ruptured tubal pregnancy can, however, hardly be held as parallel. The hæmorrhage from a ruptured pregnant tube is to a great extent venous, and it is probable that the coagulability of the blood is interfered with by some action of the chorionic villi, otherwise we cannot explain the enormous quantity of blood which may be lost from even a pin-point aperture in the tube (Wade and Watson, *Journ. of Obst. and Gyn.*, September 1908). The advocates of the deferred operation hold that the surgical principle in hæmorrhage—"at once tie the bleeding point"—does not apply in intra-peritoneal hæmorrhage, clinical experience being against it. Stillwagen

(*Amer. Journ. of Obst.*, January 1909) points out that while the percentage of deaths from primary hæmorrhage in unoperated cases of tubal hæmorrhage is 5 per cent., the mortality from the immediate operation is from 30 per cent. to 40 per cent., and he advocates delay in every case, no matter how collapsed the patient be. If she is so collapsed and suffering from so much shock as not to be able to rally under expectant treatment, operation holds out no prospect of recovery. He quotes several cases in which he has adopted this expectant treatment, including cases where the patient was pulseless and in most profound collapse. In all, the circulation improved, the temperature rose, and he was able to operate under the most favourable circumstances some days, and, in one case, three weeks, after the primary hæmorrhage, with perfect success. Baer (*Amer. Journ. of Obst.*, January 1909) expresses the same views. He refuses to operate when the patient is pulseless and in a profound collapse, having got better results by waiting for reaction and improvement in the circulation. The treatment to be adopted during this period of waiting is absolute rest, intra-venous transfusion of saline, and the administration of morphia gr. $\frac{1}{4}$ (Baer). Most of the writers are sparing in the administration of stimulants such as strychnine, and some also condemn transfusion at this stage.

To sum up, it would appear that those operators who have tried both the immediate and deferred operation believe that they have obtained better results under the latter line of treatment. Those like Lapthorn Smith and Sturmdorf (*Medical Record*, January 1909), who advocate immediate opening of the abdomen and arrest of hæmorrhage followed by the introduction of normal saline into the peritoneal cavity, are equally convinced of the soundness of their case.

The practical outcome of the discussion from the point of view of the practitioner is, that in a case of sudden intra-peritoneal hæmorrhage there is a fair prospect of the patient rallying from the immediate shock and collapse, and that there is time to get assistance and arrange for the proper performance of the operation, the patient in most cases being in better condition a few hours after rupture than immediately after its occurrence. The ideal thing is to recognise the presence of tubal pregnancy early and to operate before rupture has taken place.

INFECTIOUS DISEASES.

By CLAUDE B. KER, M.D., F.R.C.P.,
Medical Superintendent of the Edinburgh City Hospital.

The Curative Influence of Extracts of Leucocytes upon Infections.

Hiss and Zinsser (*Journal of Medical Research*, November 1908) have investigated the effects of injection of leucocytes into infected animals. Hiss considers that in many diseases we are dealing with an immunity which is largely cellular, not only as regards phagocytosis and digestion, but also as regards the neutralisation of the toxins set free by disintegrated bacteria, the cells not only ingesting the germs, but, unaided by bodies in the plasma, neutralising their products. His object in administering extracts of leucocytes has been to assist in this process, by protecting the white cells of an infected animal from destruction, and to give them an opportunity to recuperate. The scope of his investigation included the determination of the effect of extracts of leucocytes of both normal and immune animals on infections, the effect of immune serum alone and combined with leucocyte extracts, and the effect of extracts of blood-forming organs such as the spleen and the bone marrow. The extracts used were, for the most part, prepared from rabbits, by means of double pleural inoculations with aleuronat, such inoculations producing from 30 to 60 c.c. of turbid fluid in 24 hours. After centrifugalisation, the cells were washed in normal saline solution, and the extract was then obtained by emulsifying them in distilled water, and maintaining them at 37·5° C. for a few hours. A large number of rabbits were inoculated intravenously with typhoid, pneumococcus, streptococcus, and meningococcus cultures, and an injection of 5 c.c. of the extract was administered at varying intervals from the moment of infection. It was found that, whereas the control animals nearly always died, those which were treated made for the most part good recoveries, or, at least, survived considerably longer than the controls. Hiss concludes that extracts of leucocytes from normal rabbits have a distinct modifying and curative action, when given subcutaneously to infected rabbits, even should the infection be one which is usually rapidly fatal to the species. Rabbit leucocyte extracts are also active in guinea-pigs, saving them from fatal infections. If the extract is prepared from an immunised rabbit it is probably even more effective than that from a normal animal. These good results Hiss attributes chiefly to poison-neutralising or destroying bodies, which act on the endotoxins of the germs concerned and thus relieve the leucocytes of the animal from fatal poisoning. He suggests the name endo-antitoxins for these substances, considering them antibodies which are not normally given up to the plasma by the cells possessing

them, and which, in this peculiarity, resemble the bodies against which they appear to be most efficacious—the endotoxins—which are fixed constituents of bacterial cells.

Applying the experience, thus gained from animals, to man, Hiss, in conjunction with Zinsser, has treated 24 cases of epidemic meningitis, 7 of lobar pneumonia, and several of other infections. We need only concern ourselves here with the meningitis cases. Doses of 10 c.c. of the extract were usually employed and were injected subcutaneously. The total amounts given varied much in different instances, some patients receiving as much as 230 c.c. in all. Of 22 cases watched to a termination, 14 were discharged cured and without sequelæ. The remaining 8 died. The mortality, then, was a little over 36 per cent. This is a surprisingly low figure, always assuming that the mortality of the epidemic was in any way comparable to that recently observed in Edinburgh. The cases, from their description at least, appear to have been averagely severe, and the diagnosis was confirmed by bacteriological examination. A curious point is, that of 7 cases, in which treatment was begun subsequent to the seventh day of the disease, all recovered without sequelæ. On the other hand, of 15 patients, who received their first injection within a week of their first symptom, 8 or more than half died. There is no suggestion here that early injection is of paramount importance, as is the case with serum treatment, and this to some extent weakens the claim that the extract is very efficacious. On the other hand, cases admitted early to hospital are often very severely ill, and not infrequently hopeless, and some allowance must be made for that possibility. Still, it is remarkable that such uniform success should be obtained in a group of cases all of which were more than 17 days ill, and of which 5 had been ill for over 39 days. It would almost seem that, if the leucocytes really contain an anti-endotoxin, it neutralises a poison which is particularly concerned in causing the chronic phenomena associated with the disease and has only a moderate effect on the toxins responsible for the acute symptoms. The absence of chronic sequelæ in all the cases, whether treated early or late, points in the same direction, and, knowing as we do that in the case of diphtheria more than one toxic substance plays a part in the production of symptoms, it is quite conceivable that the same is the fact in meningitis. Hiss reports that even in fatal cases marked improvement was often observed in the toxic symptoms, such as delirium, vomiting and stupor, and that the temperature was frequently favourably influenced. The erratic course of the disease, however, renders definite conclusions on these points extremely difficult, as those of us who have worked with various serums know only too well. In any case, the writers are to be congratulated on a very admirable and interesting piece of work, which is highly suggestive in many ways, and which certainly should encourage other

observers to make a trial of the line of treatment described. Evidence, moreover, corroborating their experimental work will be awaited with much interest.

The Administration and Dosage of Anti-Meningococcic Serum.

Dunn (*Boston Medical and Surgical Journal*, 3rd December 1908) lays down rules for the administration of Flexner's serum in cases of cerebro-spinal meningitis. He has treated 57 patients with this preparation, and he has come to the conclusion that to obtain the best results it is necessary to give large and frequent doses. The subcutaneous method of injection is useless, and subdural administration should be always employed. He believes that the danger to be apprehended from increased dural pressure, in those cases in which no cerebro-spinal fluid has been obtained on puncture, is small in comparison to that of not giving the serum into the spinal canal, and my own experience at the Edinburgh City Hospital quite bears out this contention. Small doses of 15 or 20 c.c. did not give results as satisfactory as those when a larger amount was injected, and Dunn recommends 30 c.c. as a minimum, even if much less fluid has been obtained on lumbar puncture. The only exception allowed is in the case of very young babies, if any difficulty is experienced in introducing so large an amount of serum. He lays stress on the importance of draining away all the cerebro-spinal fluid which will flow, believing that the negative pressure so caused assists in the diffusion of the serum injected. In adults, a dose of 45 c.c. should be given if possible, especially if the symptoms are severe. The injections should, in ordinary cases, be repeated daily for 4 days, and should be continued even longer if the symptoms have not entirely subsided or if diplococci can still be detected in smear preparations. In very severe cases Dunn recommends repeating the dose in 12 hours, and has found that the results are excellent. I have had a similar experience with patients apparently moribund, and am convinced of the value of frequent doses. Dunn holds that by giving daily injections for the first 4 days, irrespective of the severity of the symptoms, there is much less chance of subsequent relapses, and it seems reasonable to adopt such a course, even should the worst manifestations disappear, as they not infrequently do, in 2 or 3 days. In chronic cases the fluid must be examined at intervals, and should diplococci be detected the serum must be again employed. Relapse should be treated exactly on the lines of the original attack. Dunn's paper is illustrated by several most instructive temperature charts.

It is interesting to find that very similar views as to the administration of anti-meningococcic serum are expressed in France. Netter (*Semaine Médicale*, 10th March 1909) insists on the advantage of intra-

spinal injections, and recommends doses of 20 to 30 c.c. for children, and from 30 to 45 c.c. for adults. These should be renewed several days in succession, whatever the result of the injection. Netter does not state which serum he employs, but it will be noticed that his method of administering it is identical with that of Dunn. Vaillard at the same meeting of the French Academy of Medicine reported that, whereas the first 5 patients in a barrack outbreak at Evreux, who were not treated with serum, all died, of the remaining 18 patients, all of whom received intra-spinal injections, no less than 16 recovered. Evidence, then, is accumulating on every hand that, with a reliable anti-meningococcic serum properly administered, much may be done to keep within moderate limits the appalling mortality of cerebro-spinal meningitis.

DISEASES OF THE EAR, NOSE AND LARYNX.

By A. LOGAN TURNER, M.D.,
Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh;
and
W. G. PORTER, M.B., F.R.C.S.,
Surgeon, Ear and Throat Infirmary, Edinburgh.

The Use of the X-Rays in the Diagnosis and Treatment of Certain Affections of the Nose and Throat.

When the Röntgen rays were first suggested as a further means of facilitating diagnosis many were sceptical as to the possibility of their diagnostic value in connection with affections of the nasal cavities and their accessory sinuses. It was thought that the thickness of the cranial bones would so interfere with the passage of the rays through the skull that the detection of pathological changes in the bones themselves or in the cavities enclosed by them would hardly be possible. While it is equally true to-day that the structure of the cranial bones increases the difficulty in obtaining as clear a picture as in the case of the limbs or even of the chest, the improvements in technique and in the construction of the apparatus employed have largely overcome this difficulty. The X-rays have undoubtedly established their position as additional means of assistance, not only in the diagnosis of certain conditions of the nose and throat, but also by supplying the surgeon beforehand with an anatomical conception of the field of operation. The value of this latter point is evident when we remember the great variations in the size and outlines of the different accessory nasal sinuses. In a short review of this kind it is impossible to go into detail; our object is rather to refer to some of the more salient points in their application to the head.

In connection with the nasal and accessory cavities the method of

procedure is as follows:—A compressor with diaphragm is used, and the tube is accurately centred behind it, while the external occipital protuberance is made the centre point. The plate, with the film side against the patient's face, is bandaged or fixed with elastic bands, or the plate may be laid upon the table and the patient's face superimposed upon it. It is of the greatest importance to pose the head in all cases in the same way. The least tilting of the head will alter the relation of the different parts and lead to considerable confusion in the interpretation of the negative. The length of the exposure varies with the size of the head, the age of the patient, and the hardness of the tube. While some operators prefer the softer tubes, we have obtained better results with a fairly hard tube. The time of exposure varies from one to two minutes. When a profile picture is taken the exposure is shorter than in the case of the antero-posterior exposure. The plate shows, in the first instance, whether the frontal sinuses are present, and indicates their size and configuration. It outlines the maxillary antrum, and gives a view of the ethmoidal cell labyrinth superimposed upon the sphenoidal sinuses. The distinctive features of a sinus in which suppuration is present are represented in the positive by a darker shadow than that of a healthy cavity; and, secondly, by the blurring of the outline, usually in distinct contrast to the definition of the margin in health.

The anatomy of the frontal sinuses has gained much and will probably gain more from the application of the rays to the skull during life. At the meeting of the First International Congress of Laryngology and Rhinology, held in Vienna in April 1908, several papers were read bearing directly upon the use of the X-rays, and the large series of photographs and plates which were exhibited bore testimony to their wide application. Onodi dealt with the anatomical aspect of the question. The majority of surgeons whose work lies in this field have probably opened once, if not oftener, the frontal sinus area in the expectation of finding a diseased cavity, and no trace of a sinus has been discovered. A preliminary X-ray picture would have made a mistake of this kind impossible. The use of ordinary electric transillumination, on the other hand, will not prevent such an error, because an opacity in the frontal sinus area by this method may imply disease of the sinus, absence of the sinus, or even a healthy sinus. With a good X-ray picture, on the other hand, the frontal cavity will be delineated whether it be normal or diseased, and therefore no mistake regarding its presence can arise. Onodi examined 1200 crania by both methods. Ordinary electric illumination demonstrated the apparent absence of the frontal sinuses in 30 per cent. of the crania, while radiography only showed them wanting in 5 per cent.

It is frequently a matter of difficulty to form a correct opinion as to the existence of pus in the frontal sinus, and every additional aid in

diagnosis is a gain to the surgeon. This is especially the case where there is ethmoidal disease, as the ordinary intra-nasal methods of diagnosing frontal sinus suppuration are naturally interfered with by the presence of pus in the ethmoid cells. An X-ray picture is therefore of great value, and may prove the only diagnostic means at our disposal other than opening the frontal sinus. If the disease is bilateral, however, it is much more difficult to make a diagnosis when the blurring of the outline of the two frontal sinuses is well marked, because we have no healthy cavity for comparison. It must be remembered also that when the frontal sinus is small and shallow, there may be a blurring of its edge, difficult to differentiate from the blurring seen in a diseased cavity. The X-rays, therefore, cannot always be regarded as establishing a correct diagnosis of the condition of the frontal sinus.

In the case of the antrum of Highmore, ordinary electric illumination may give fallacious results. Most observers must have found that the healthy maxillary sinus may be quite opaque, while a diseased cavity, on the other hand, may illuminate equally with the unaffected sinus upon the opposite side. It is true that this does not occur nearly so frequently as in the case of the frontal sinuses, nevertheless, even in the antrum, it is advantageous to expose the patient to the X-rays and thus avoid the possibility of obtaining a false impression from electric transillumination. Scheier (*Rev. hebd. de Laryngol, &c.*, 12th December 1908) has drawn attention to this point in connection with a case of bilateral, frontal, and maxillary sinus suppuration. By electric illumination he drew the conclusion that only the left antrum was affected, while the examination of the X-ray picture so strongly suggested an affection of the right sinus also, that he was led to puncture it and wash it out, thus demonstrating the presence of pus. In a case coming under our own observation, a suspicion of antral suppuration was raised, because of the shadow observed in an X-ray picture which was taken of the patient. She had no nasal symptoms, and there was no evidence of pus in the nasal chamber even on several examinations. The right antrum presenting the shadow was punctured and pus was washed out. We are not prepared to say, however, that loss of definition of the maxillary sinus necessarily implies the existence of disease. Kuttner, in his valuable atlas illustrating the use of the X-rays in accessory sinus disease, draws attention to the fact that he has washed out the antrum, with a negative result, when the shadow had led him to suspect that suppuration might be present. We have been able to corroborate the observation of others that an antrum which has been operated upon by the radical method may remain very ill-defined when X-rayed, even though the suppurative condition has been cured. This is probably due to the fact that after an operation of this kind the maxillary sinus becomes partly obliterated and the normal outline of the cavity lost.

In connection with the use of the X-rays in the surgery of the frontal sinuses, there is one point which must not be lost sight of, and that is the valuable assistance which the surgeon receives from having a picture of the size and outline of the cavity prior to operation. It enables him to make up his mind beforehand which operation will best suit the necessities of the case. Instead of making a small incision and exposing a limited area and defining the extent of the sinus by means of a probe, he can at once expose the whole field and proceed without interruption to deal with the cavity in the way he thinks best for a small or large sinus as the case may be. He has also ascertained from the picture whether the orbital roof contains an extension of the ethmoidal air-cells—a factor which may considerably influence the result of his operation. While the rays are of undoubted advantage in the diagnosis of accessory sinus disease, we do not wish to imply that they should take the place of other well-recognised clinical methods. The X-rays provide additional and, in many cases, valuable help, and they control and confirm other clinical phenomena. There is sometimes a dangerous tendency in medicine to rely upon the most recent introductions, and to neglect those which are old established and well proved.

As a therapeutic agent the X-rays have a useful if somewhat limited field of action. Apart from lupus, rodent ulcer and other pathological conditions of the external nose, the rays can be applied to lesions of the interior of the nose, the mouth, the pharynx and larynx, but their action on the mucous membrane is not so potent as on the skin. Within the nose they have a marked action on rhinoscleroma as well as on lupus of the mucous membrane. Leukoplakia of the tongue can also be beneficially influenced by their application. The results of treatment of epithelioma of the lip and palate are much less favourable, though cures have been reported. Treatment of sarcoma of the nasal and accessory cavities has not been successful. On the other hand, lympho-sarcoma and malignant lymphoma of the tonsils and cervical lymphatic glands have reacted to the rays in an astonishing way, completely disappearing after a short period of treatment but unfortunately recurring, the recurrences being less amenable. In tuberculosis and lupus of the larynx a few cases of cure have been recorded, but carcinoma of the larynx is beyond the influence of the rays. As the feeble action of the rays on the larynx and hypopharynx might be attributed to the resistance offered by the skin, Müller, Kayser, Mader, and Bertolotti have devised tubes which can be introduced into the mouth so that the rays may play directly upon the affected part. Mader has in this way successfully treated a case of carcinoma of the posterior wall of the pharynx. Carcinoma of the œsophagus is also said to have been benefited by the X-rays introduced through the œsophagoscope.

THERAPEUTICS.

By F. CHARTERIS, M.D.,
Assistant to the Professor of Materia Medica and Therapeutics,
University of Glasgow.

Serotherapy of Nephritis.

Tiessier discusses the serotheraphy of nephritis and the serious manifestations of uræmia. He meets these symptoms of auto-intoxication by the subcutaneous injection of the serum obtained from the renal vein of a goat. The treatment is based upon the supposition that, if the kidney possesses any internal secretion, the blood in the renal vein will be most richly supplied with the internal secretion. In preparing the serum, the renal vein is ligatured at its junction with the vena cava, and the blood is removed by an aspirating needle. Unless the ligature is applied, the aspiration tends to withdraw caval blood, which is comparatively deficient in the internal renal secretion. The blood is of course withdrawn under all aseptic precautions, and collected in a sterile flask. The serum separates in the course of 50 to 60 hours, and is then poured into small vessels containing 15 to 20 c.c. which are sealed with boiling paraffin wax. The serum so prepared shows feeble toxicity, while its hæmolytic power is less than that of serum obtained from blood from other sources than the renal vein. It resembles arterial serum in its content of Na.Cl. and calcium, and in containing no glycolytic ferment, but is somewhat poorer in albumen.

A small number of clinical cases are recorded in which the use of the serum was followed by very striking improvement in the symptoms. In all cases the excretion of albumen notably diminished, while the amount of urine increased. In three cases, reported in detail, the serum injections markedly relieved uræmic manifestations (headache, convulsions and Cheyne-Stokes syndrome). While it is obvious that it cannot restore or replace diseased tissue, Tiessier thinks that the serum is applicable to all cases of nephritis associated with symptoms of auto-intoxication, especially if there is reason to believe that the liver is functioning badly. He thinks that the action of the serum is complex and indirect. It is not simply a case of stimulating diuresis, since after the use of serum the nitrogenous quotient is increased, but other urinary constituents remain unaltered. He is more inclined to ascribe the beneficial action to an indirect action upon the poisonous cytotoxins and nephrotoxins, which he considers may be broken up from a hypothetical combination with chlorine and the freed toxalbumins are eliminated or destroyed by the liver. In this way alone can he explain the otherwise anomalous fact that the urine, after the serum is administered, is less toxic than before, though the clinical symptoms of toxæmia are greatly diminished (*La Journ. Méd. Franc*, Paris, 15th October 1908).

Another method of renal opotheraphy is advocated by Renaut.[1] He employs maceration of fresh kidneys of young pigs. To extract the constituents unchanged he finds it necessary to perform the maceration with saline solution. The presence of alcohol or glycerine is inadvisable. The saline maceration is highly repugnant in taste, and recently Renaut has advocated its application in the form of high rectal injections. Three fresh kidneys removed immediately after death are finely minced and macerated for 4 hours with 600 c.c. of 0·6 per cent. Na.Cl. solution. In hot weather the dish is surrounded with ice. At the end of the time the supernatant fluid is strained through fine linen, the pulp remaining is expressed, and the fluid so obtained is added. The product is divided into three portions, of which one forms a dose. The injection is followed by diuresis in from 24 to 48 hours. Renaut does not claim for opotheraphy that it is a specific and definite cure for interstitial cirrhosis, but he finds that it is a very valuable remedy in renal impermeability, which in early cases will re-establish diuresis after other methods have failed. When a kidney begins to become closed up, partly from mechanical stasis and partly from toxic œdema, then the extract of pig's kidney is the treatment to be chosen. Renaut considers the kidney to be an active glandular structure with an internal secretion. Further, the tubular epithelium plays an important part in elaborating a series of substances capable of transforming the toxic products accumulated in the blood into products less toxic and more dialysable. Extracted from the kidney and administered to another animal, the same action is seen resulting in re-establishment of diuresis and the increased elimination of urinary products.

Vialard[2] records a small series of cases which illustrate the action of the macerated preparations. He concludes that in a few exceptional cases the amelioration produced by their use is so great that one can almost call it a permanent cure. In the majority of cases renal opotheraphy removes or diminishes the attack of renal insufficiency causing albumen and the other signs of the toxæmia (headache, œdema, &c.). He considers that opotheraphy for the uræmic corresponds to digitalis for cardiac insufficiency. In all cases the benefit is only seen after the establishment of a free diuresis.

A Specific Ferment Treatment in Diabetes.

Zuelzer communicates certain observations made with a pancreatic extract prepared from glands removed during the height of digestion. The extract was tested on animals suffering from diabetes due to the removal of the pancreas. In all cases in which it was used the quantity of sugar excreted fell after the injection. The extract proved to be quite harmless for human beings. In the first instance it was tried on a man suffering from diabetic coma. The patient received two subcutaneous injections of 3 and 5 grms. of the extract.

The urine could not be collected for examination, but the patient's mental condition and general health improved greatly. He died 17 days after the injection, before a second supply of the extract could be obtained. This case only showed that the extract was apparently harmless. The records of the second case are much more striking. A man of 27, passing from 1400 to 3000 c.c. urine containing from 2 per cent. to 6 per cent. of sugar and giving the acetone and diacetic reaction, received an intravenous injection of 1 grm., and thereupon the amount of urine fell to 1400 c.c. with 1·3 per cent. sugar, but acetone and diacetic acid were present. A second larger injection of 2 grms. was then given, and following this both acetone and diacetic acid disappeared completely for three days, and the sugar gradually fell till only a trace was present on the third day and then gradually reappeared. In six other cases similar results were obtained, viz. progressive diminution of sugar for two or three days, and disappearance of acetone and diacetic acid without any change in the previous diet. Occasionally the injections were followed by a reaction, with fever and shivering for a couple of days. To avoid these he proposes to use smaller and more frequent injections (*Zeitsch. f. experim. Pathol. u. Therap.*, Berlin, 16th September 1908).

Untoward Effect Following the Use of Maragliano's Serum

Landis records certain symptoms after the use of this serum which seem to come within the category of anaphylaxis, though not quite similar to the anaphylactic symptoms after diphtheria antitoxin. Maragliano's serum has been in use at the Phipps Institute since 1904. During this time 41 cases have been treated by 1012 injections, each of 1 c.c. In addition, 4 patients received 97 doses, each of 2 c.c., by the mouth. Of the 41 cases treated by injection 7 had alarming untoward symptoms, although none ended fatally. In six instances the phenomena were almost identical. Within a minute or two after the injection the patient's face became suffused and there was an expression of great anxiety. There was great difficulty in breathing, and a sense of oppression localised to a great extent over the præcordium. The finger-tips became blue and the skin was covered with a cold, clammy sweat. The pulse was very rapid (140 to 160) and almost imperceptible at the wrist. In three cases there was intense lumbar pain, one patient had nausea and vomiting, another showed muscular tremors. All felt a sensation of impending death. In each case the phenomena passed off almost as rapidly as they appeared, and in a few minutes the patients were quite well again. In four cases the hypersusceptibility evidenced itself only once following the third, tenth, twentieth, and twenty-second injection. In three cases the injections were continued without further trouble, but in two instances the evidence of hypersusceptibility occurred after two successive injections. In one

of these the treatment was discontinued but in the other was resumed without any further trouble. The injections were usually given every second day, and the earliest case to react was one on the sixth day, *i.e.* after the third injection, while the latest occurred on the fiftieth day after the twenty-second injection. All the cases in which these untoward results developed had advanced or moderately advanced disease. Nineteen dispensary cases with less advanced lesions which received two injections weekly showed no example of anaphylaxis, but furnished four instances of ordinary "serum disease" (*Therap. Gazette*, November 1908).

Magnesium Salts.

Miller (*Amer. Journ. Med. Sc.*, December 1908) records a fresh case of tetanus treated with subarachnoid injections of magnesium sulphate. The patient, a boy of 7, developed tetanic symptoms on the seventh day after a laceration of the hand. He was admitted on the third day of the disease with marked symptoms of tetanus, spontaneous and reflex general convulsions, inability to separate teeth more than 2·5 cm. He received repeated injections of magnesium sulphate into the subarachnoid space, and in addition was given antitoxin daily in doses of from 1500-7000 units. In all 11 lumbar punctures were made within thirteen days, approximately 2·5 c.c. of a 25 per cent. solution of magnesium sulphate being injected on each occasion. Extensive paralysis followed each injection, involving all the muscles except those of the head, neck and diaphragm. The paralysis lasted from 18 to 29 hours. On several occasions the injection was followed by respiratory collapse lasting 11 to 14 hours, and the pulse-rate dropped, though not to an alarming extent. During the respiratory collapse the respirations fell as low as five per minute and became weak and shallow. The collapse lasted as a rule several hours and was attended with considerable secretion of bronchial mucus which was relieved by injections of atropine. Attending the diminution in rate there was irregularity of amplitude of the respirations. The collapse usually developed three or four hours after the injection and lasted for several hours (11 to 14). In spite of the collapse the circulation remained good (though the rate dropped) and there was no cyanosis.

The effect of each injection upon the muscular spasm was striking. Paralysis of the legs, abdominal muscles, and sometimes of the arms also, appeared within 30-60 minutes. The neck and masseter muscles usually escaped and the face muscles were never paralysed. The bowels acted involuntarily throughout and retention of urine was the rule. In this case the relaxation of the masseter and pharyngeal muscles was not always sufficient to enable the boy to swallow and for several days he required to be fed with the stomach tube.

Including this case 14 cases of tetanus are now on record which have been treated with magnesium sulphate. Of 11 cases treated with subarachnoid injections 5 have recovered (55 per cent.), which is satisfactory, as all were of a severe type. The other three cases were mild cases and recovered with subcutaneous injections of from 2 to 3 drachms of magnesium sulphate.

Miller concludes that the injections are of value. It is possible to procure complete muscular relaxation which avoids the rapid exhaustion of convulsions and permits of the patient taking nourishment. Magnesium chloride has been used by Calcaterra[3] without any definite benefit in chorea. He gives intramuscular injections of 1 to 2 c.c. of a mixture of two parts mag. chlor. to three parts water.

Lecethin.

This substance has recently come into notice as a means of ameliorating nervous symptoms. Peritz[4] has seen great improvement result from large intramuscular injections of lecethin in locomotor ataxia and general paresis. The most general improvement noted in a series of nine cases was return of sensation and disappearance of Romberg's symptom, while in three cases the eye reflex to light returned. He used injections of 0·1 to 0·2 grm. and gave each patient about 10 grms. Berkley[5] found an alcoholic solution of lecethin of value in nervous asthenia and also in a few cases of exophthalmic goitre. He administered it by the mouth, and found that the patients took it readily despite the nauseous, disagreeable taste, as within an hour the nerves became quietened and the muscular tremors disappeared, to return slowly after a few hours. It is contra-indicated in cases of gastric irritability, and in his experience acts best when combined with an ample milk diet. He considers that possibly it acts as an antithyroid hormone. Its action does not depend upon splitting up into glycero-phosphoric acid and cholin. It seems to be absorbed unchanged and probably is carried by the white blood cells. He finds that lecethin is the most satisfactory drug for increasing the number of red and white blood cells. Franchini[6] fed starved rabbit with lecethin and found the amount of lecethin in the muscles and liver was increased, but not that of the brain. The urine contained no cholin or formic acid so that probably not much of the lecethin is split up in the body.

References.

1 *Bullet. gén. de Thérap.*, 30th December 1908.
2 *Ibid.*
3 *Gaz. deg. Osped.*, No. 47, 1908.
4 *Berl. klin. Wochenschr.*, 13th January 1908.
5 *Johns Hopkins Hosp. Bullet.*, September 1908.
6 *Archiv. d. Farmacol. Sperim.*, August-September 1908.

NEW BOOKS AND NEW EDITIONS.

Henry Phipps Institute: Fourth Annual Report (1st February 1906 to 1st February 1907). Published by Henry Phipps Institute, 238 Pine Street, Philadelphia. 1908.

THE Henry Phipps Institute has issued the report of its fourth year's work. It contains a record of patient, painstaking and laborious investigation into the causes, treatment and prevention of tuberculosis.

In it is to be found an account of the general and special clinical and pathological work done by the 40 odd members of the medical staff at the Institute during the past year. Facts elicited by further inquiry into the incidence of tuberculosis in the children of mixed marriages, together with the incidence in parents of the same nationality all go to strengthen the view previously advanced, that of all the white races the one most susceptible to tuberculosis is the Celtic race, and of its various branches that which hails from Ireland is the most liable of all to the disease. This is particularly interesting in view of the fact that there are some writers hailing from the north of Ireland who, regarding this statement as another insult to Ireland, have denied its truth and assert that such is not the case. The other important point brought out in the Sociological Section has to do with the Jewish race—a race believed by many to be immune to tuberculosis. But this is by no means correct. What is now shown to be the case is, that whilst the mortality to the disease amongst members of the Jewish nation is very low, the actual incidence, or morbidity as it is called, is tolerably high. Jews contract tuberculosis in large numbers, but they also recover in very large numbers.

The investigation into the relationship of hæmoptysis to the presence of pneumococci in the expectoration of phthisical patients begun last year has been and is being continued, and seems, so far as it has gone, to point to the conclusion that the connection is a close one.

Much work has been devoted to an endeavour to settle the much-debated point as to the exact *rôle* played by the tonsils in the process of infection. Do they admit the tubercle bacillus into the lymph and ultimately into the blood-stream it has been asked? There seems ground for believing—indeed it is claimed that it has now been proved—that for the tubercular germ, at least, the tonsil is many times more partial than other portions of the throat. The disintegrated epithelium normally found in the crypts certainly offers but a feeble mechanical barrier to the entrance of the tubercle bacillus. The supraclavicular glands which occupy the subclavian triangle are regional to the apex of the parietal pleura. These communicate with the external group of the deep cervicles group of glands, which in their turn can be shown

to be indirectly connected with the follicular surface. It is in this connection that most of the experiments have been done.

There seems to be a tendency on the part of quite a number of the Institute investigators to deal kindly with the poor T. B. Thus it is exonerated from all blame in promoting hæmoptysis, night sweating, dilated pupil, tubercular neuritis, pyrexia, etc., and the guilt has been placed at the door of "other associated organisms." But this opens up a wider field of discussion than can be appropriately entered upon at this time.

Enough has perhaps been said to indicate the interesting and valuable nature of this work which is being carried on on the other side of the Atlantic, and to show that, to those professing to keep in touch with the latest investigations into the nature, causes and treatment of tuberculosis and its associated problems, an acquaintance with this attractive volume is essential.

A Manual of Natural Therapy. By THOMAS D. LUKE, M.D. Pp. 303. Bristol: John Wright & Sons. 1908. Price 7s. 6d.

IT would be no easy task to frame a definition of "natural therapy" that would include the subjects which Dr. Luke treats of in this book and exclude others. Gymnastic systems such as Sandow's or the Swedish are not given, nor is the sanatorium treatment of phthisis and insanity; on the other hand, the claims of various ingenious applications of electricity to be "natural" methods might be called in question. But we do not wish to cavil. Broadly speaking, natural therapeutics are regarded as methods of treatment which do not involve the administration of drugs. Scepticism has a most useful function to perform, whether in theology or in medicine, and through its aid our pharmacopœia is, let us hope, becoming more and more rational with every revision. It must be admitted that there is room for scepticism in regard to other modes of treatment than that of polypharmacy, as those can testify whose lot it has been to hear the tales of patients who have been treated at fashionable watering-places. But Dr. Luke succeeds in showing that hydrotherapy, heat and light, massage, electricity and diet fill a very large place in the treatment of disease, and that their application is founded on sound physiological principles. Every physician should at least know the cases in which he should call in such aids; only thus can he guide his patients to the proper quarter for such specialised treatment. This book is thoroughly practical, well illustrated, and condensed. The first section, occupying about ninety pages, is perhaps the most complete and satisfactory. It deals with the various hydrotherapeutic procedures, and many of them can be quite well carried out in private houses. One useful chapter deals with the technique of compresses, packs, fomentations and poultices. The Nau-

heim baths and exercises come in for a frank and, on the whole, favourable criticism. The author then deals with the application of heat and light. He is enthusiastic over electric light baths, and thinks their value can scarcely be over-estimated. After sections on massage and the rest-cure (Weir-Mitchell's), galvanism and faradism are dealt with briefly. The high frequency currents are eulogised mainly as a powerful suggestive influence in nervous complaints. Dr. Luke's general views on diet are sound and free from faddism, though the ancient description of wine as the milk of old age might now be consigned to limbo. The value of uric acid-free diet in selected cases is emphasised. Thus in a brief and succinct manner, while no subject has been treated exhaustively, a good idea is given of certain "natural" methods of treatment, and a book has been provided which is sure to prove most useful to the general practitioner.

The Diagnosis of Nervous Diseases. By PURVES STEWART, M.D., F.R.C.P. Second Edition. Revised and Enlarged. Pp. 451. London: Edward Arnold. 1908. Price 15s.

IT is a great pleasure to review the second edition of a good book, and there is no doubt that the quality of this volume has been fully recognised by the advanced students and general practitioners for whom it was originally written, because the second edition has appeared only two years after the first.

No book of this or any other kind should be reviewed until it has been faithfully read from cover to cover, and the task in this instance has been both pleasant and profitable. One object at the back of the reviewer's mind is to point out any mistakes he may note and to criticise the general plan and treatment of the subject-matter. The criticisms we propose to offer in no way detract from the high opinion we have formed of the work Dr. Purves Stewart has accomplished. It is a great temptation to the neurologist in writing a book on his own special subject to introduce the very latest theories about, say, the centre for the sphincter pupillæ muscle. But the student at all events wants what may be termed the classic or accepted view, and in our opinion any innovation until absolutely *proved* to be correct, should be accommodated in a footnote or so introduced that the generally accepted theory should not be obscured. Our second remark is not a very apt criticism in this case. We prefer to have a sharp type of any nervous disorder and to introduce the innumerable exceptions or deviations from the type in such a way that the reader has no difficulty in keeping in his memory the stereotyped word-picture. It is only in part of the volume under review that the insinuation that the author has not quite carried out our ideal can be said to apply,

for most of the chapters are taken up with the methods of examining the nervous system and interpreting the signs of disease referable to that system.

We found the book most readable, admirably illustrated, and representing a huge amount of thought, care and experience. The new sections are, without exception, of great value. The fact that there are so few competitors in the field, shows how difficult is the task Dr. Purves Stewart has undertaken. The general plan of the book is well conceived and naturally leads the reader on from chapter to chapter, while for consultation purposes an excellent index and the arrangement of subjects in separate chapters offer the best possible assistance. We are proud to claim that the best book of the kind we have read is from the pen of an Edinburgh man.

We must congratulate the publishers on the printing and the illustrations, and we hope that each succeeding edition may grow in size and completeness.

Mind and its Disorders: A Text-Book for Students and Practitioners. By W. H. B. Stoddart, M.D., F.R.C.P. Pp. 481. 74 Illustrations. London: Lewis. 1908. Price 12s. 6d.

This is the latest volume of Lewis's Practical Series. The preface states that the work has been prepared with the object of providing the student and practitioner with a succinct account of our existing knowledge of mental diseases. The book is divided into three sections. The first deals with normal psychology; the second with the psychology of the insane; the third with mental diseases. Throughout the book the physical basis of "the mental processes" is never lost sight of. The section of normal psychology is clearly and interestingly written, particularly the chapters upon Perception and Ideation. Under Disorders of Sensation in Part II., diminution of the senses of sight, hearing, taste and smell are described. The charts illustrating cutaneous anæsthesia are especially interesting. The various forms of hallucinations, illusions, disorders of memory and the emotions, together with erroneous judgments, are all fully dealt with. The causes of insanity are divided into endogenous and exogenous, the most important endogenous cause being heredity, while the exogenous causes may be worry, fright and other forms of nervous shock. The toxic theory is dismissed in two and a half lines as untenable, as the author believes that he has seen cases of insanity follow upon shock and love affairs. The classification is said to be based upon Kraepelin's, but Dr. Stoddart has found it necessary to simplify this for his students by certain changes of nomenclature. This, the latest classification, the Kraepelin-Stoddart, is as unsatisfactory

as any of its predecessors. Melancholia, which is classified under Intermittent and Periodic Insanities, is divided into the usual varieties of stuporose, agitated, &c. The physical and mental signs and symptoms of the disease are well described. Referring to the toxicity of the urine, it is stated that "the toxicity is possibly due to indoxyl." Indoxyl, however, is not a toxic substance, it is only an indication of toxic processes occurring in the intestinal tract. The treatment of the melancholic patient is also sound, and is summed up in the sentence, "He must be put to bed and well fed." There is always more or less difficulty in coaxing such patients to take food, but the greatest difficulty is to assist their assimilation. On these points Dr. Stoddart gives some useful practical hints. Massage and gentle faradism are recommended as aids to nutrition, but with this statement many of Dr. Stoddart's fellow-practitioners will not agree. Massage frequently makes a melancholic patient restless and irritable. Mania is subdivided into simple, acute, acute delirious and chronic. The physical signs and mental symptoms described are those of the elevated stage of folie-circulaire or manic-depressive insanity; surely acute delirious mania is an altogether different disease from the elevated stage of circular insanity. The rare condition of anergic stupor, which sometimes intervenes as a phase in circular insanity, receives due notice. Under Acute Confusional Insanity at least five varieties are described by the author. The depressive, the excited, the stuporose, Kraepelin's collapse delirium and the katatonic form. It is very doubtful if the first three of these varieties so described are not different stages of one disease, which has been described by other authors as a variety of mania. The description of dementia præcox and its subdivisions is not such as to carry conviction to the sceptical. General paralysis is regarded as a late syphilitic disease, and the author quotes Mott's interesting theory that there is a special neuro-toxic variety of the treponema pallidum. The interesting researches of Ford Robertson and M'Rae on the bacillary origin of the disease is discussed and is held to be still *sub judice*. The chapter on Epilepsy is well up to date and the latest theories as to the causation of the seizures are mentioned. After describing alcoholism and some of the other intoxication psychoses there follow excellent short chapters on Senile and Arteriopathic Dementia, Psychasthenia, Neurasthenia and Hysteria. The Law and Insanity, examples of the English Lunacy Schedules and methods of staining the nervous tissues and of examining the cerebro-spinal fluid terminate the volume. There is an excellent index. There is no doubt that the work contains much that is new and interesting, and it is undoubtedly a valuable addition to the already numerous works on insanity, but one of the weak points in it is the pathology. Throughout the book there is practically no mention made of pathological changes occurring in any other organ of the body except the nervous

system. Twenty-five years ago Savage wrote, "I feel strongly that as long as mind is supposed to be located in the skull we shall make little progress . . . we must be more general in our pathology if we are to understand our subject." What was true twenty-five years ago is true to-day.

Handbook for Attendants on the Insane. Published by the Authority of the Medico-Psychological Association. Fifth Edition. Revised and Enlarged. Pp. 390. London: Baillière, Tindall & Cox. 1908. Price 2s. 6d. nett.

THIS manual, the first edition of which was written a quarter of a century ago by four Scottish asylum physicians, is the recognised text-book in Great Britain and Ireland for the training and examination of those who aspire to the British Certificate of Proficiency in Nursing the Insane. This edition is twice as large as the fourth or last published in 1902, and has been practically re-written and re-arranged, and its contents are a fair indication of the advances which have been made in the nursing of the insane in this country during the past decade, and of the desire and efforts of the physicians of our mental hospitals to raise the standard of mental nursing to the corresponding degree of efficiency of the nursing in our best general hospitals and schools of training. The teaching of the handbook is supplemented by that of other manuals, by lectures and demonstrations given by the medical and other officers of the mental hospitals of the country, and by practical instruction in the wards, the course of training occupying three years.

The nurse, like the poet, is born, not made. Book-learning, though important, is less so than the everyday work of the ward; but underlying these are the fundamentals for success—a sound and healthy constitution, a strong liking or "call" for the profession, and certain qualities of heart, mind and character, the demands on which, from the very nature of the work, are greater in the nursing of the insane than the sane. These points are duly emphasised by the committee of revision of the handbook, who are to be congratulated on their labours. They have produced a manual which cannot be crammed, got up by rote, and repeated parrot-like. The volume will require steady and regular reading and careful rumination for its proper digestion and assimilation by the mental probationer. The teaching throughout is sound, but Professor Schäfer's method of artificial respiration should have been included amongst those described, especially as it has been adopted by the Royal Life Saving Society, and recommended as the best by a special committee of the Royal Society of Medicine. Again, in point of arrangement, the chapter on Diseases of the Nervous System should have followed that on the Anatomy and Physiology of

the Nervous System, instead of being sandwiched between the chapters on General Care and Nursing of the Insane and General Duties of an Attendant.

Infectious and Parasitic Diseases. By MILLARD LANGFELD, A.B., M.B. Pp. 254. London: Rebman, Ltd. 1908. Price 5s. 6d.

THE author had originally intended this volume for the use of nurses, but later seems to have changed the original design by having enlarged its scope so as to provide material of interest for students and practitioners as well. Possibly, as a result of this alteration, the value of the work has to some extent been diminished.

It is, however, written in an extremely simple and easy style, and is mainly devoted to the fundamental principles of infection. The subject is discussed, in general, without any systematised description of the various infectious diseases.

The different headings, such as "Cause of Disease," "Bacteriology," "Inflammation," "Parasites," "Disinfection," &c., are entered on very superficially, and are explained in such an easily understandable manner that the volume might be of some value for the scientific education of nurses.

For practitioners and students its uses must be very limited indeed.

A Practical Text-Book on Infectious Diseases. By R. W. MARSDEN, M.D., M.R.C.P. Pp. 287. Manchester: At the University Press. 1908.

As claimed by its title, Dr. Marsden's book is of a concise and practical nature, and differs from most other works on the same subject, in that it does not attempt to illustrate the different infectious diseases either by photographs or temperature charts. Bacteriological and pathological points, moreover, are barely mentioned, except when they have direct relation to diagnosis or treatment, and this, we think, is a move in the right direction, as it is quite impossible for the general practitioner to keep pace with modern bacteriological research. Throughout the book the information given seems thoroughly adequate, and especial attention is paid to diagnosis. A relatively large amount of space is also devoted to questions of treatment. Dr. Marsden's advice on these points is eminently sound and practical, and, as it is given with the minimum of "padding," his book can hardly fail to be of the greatest service to the busy practitioner. An interesting chapter on Pulmonary Tuberculosis from the Point of View of Public Health is appended, and a short but valuable article on puerperal septic disease by Dr. Knyvett Gordon ends the volume. Dr. Gordon is a strong advocate of curetting at once in all cases, and his wide experience of puerperal fever renders him a very safe guide in this matter.

A Manual of Bacteriology, Clinical and Applied. By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H., Professor of General Pathology and Bacteriology, King's College, London. Third Edition. London: J. & A. Churchill. 1908. Price 10s. 6d.

The third edition of this excellent manual is an admirable treatise on bacteriology. The earlier editions are so well known and so highly prized by students and laboratory workers that we need refer only briefly to some of the special features of the new edition. In the three chapters on Methods of Investigation the directions that are given regarding all the ordinary laboratory methods are explicit and accurate. Then follows a short but useful section upon the microscope and how to use it. Chapter V., on Infection and Immunity, presents in the space of sixty-six pages a more lucid, concise and up-to-date presentation of these difficult subjects than possibly any other similar work in the English language. In the subsequent six chapters the author treats of the cocci and bacilli. As evidence of the text being in line with the most recent advances in the subject, we may refer to the sections on the differentiation of the Gram-negative cocci from one another, on the use of complement fixation tests in the clinical diagnosis of disease, and to the sections on typhoid carriers. The bacteriological methods to be employed in the diagnosis of the various diseases are fully detailed in each instance. These chapters may be commended to the notice of the clinician. In Chapter XX. we find a capital account of *Spirochæta pallida*, and of the Wassermann reaction. The illustrations are numerous, original and good.

Text-Book of General Bacteriology. By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago. Pp. 557. Fully illustrated. Philadelphia and London: W. B. Saunders Company. 1908. Price 13s.

The number of text-books of bacteriology available for the student and practitioner is a large one, and as an excuse for bringing another before the medical public the author claims that there is room for a book giving a general introduction to the subject, particularly with some regard for perspective and with emphasis on general rather than on special questions. This aim has been kept in view throughout, and the result is a book which is not only very readable but which should prove a safe guide for the student, for the graduate attempting to carry out clinical bacteriological investigations, and, although all details characterising individual bacteria are not furnished by the author, yet a sufficient description of their salient characters is provided to make the book a useful one for the young investigator in the laboratory. The information is thoroughly up to date throughout. We might

especially instance the chapters on Immunity, on the Colon-Typhoid Group, on the Spirochætes, on Bacteria in Relation to the Nitrogen Cycle, on Bacteria in the Arts and Industries, and on Bacteria in Relation to Food. Short sections deal with the bacterial diseases of plants, and a short appendix gives the information available on infectious diseases of unknown causation, for example, small-pox, yellow fever, whooping-cough, scarlet fever, measles, &c. A good feature of the work is the presence, at the bottom of each page, of references to leading papers on the subject under discussion.

The author details a limited number of staining methods. We think that this is right in principle, but from the general usefulness of Leishman's stain we should have expected it to be included. Its place, as well as that of the related stains—Jenner's, Giemsa's, Wright's, &c.—is taken by the original Romanowsky stain. Then there is no mention, so far as we can see, of Gordon's methods for differentiating the streptococci or of the later application of these methods for differentiating staphylococci. This is a more serious omission. There are several other points, for example, with regard to the behaviour of certain organisms when stained by Gram's method, with which we are not in agreement with the author.

The volume is well illustrated, but we regret to see that, with few exceptions, the plates are borrowed from other sources. We hold strongly that if an author has a message worth delivering, as we feel Jordan has, he should illustrate it from his own experience, and from his own points of view.

We have received the Report of the Board of Health on Plague in New South Wales during 1907. This details the points of importance, and experiments, conducted in connection with the seventh outbreak of plague at Sydney, and also in connection with the outbreak at Kempsey, Macleay River. The former is described by Dr. J. Ashburton Thomson, whose previous reports on Plague in Sydney are well known; and the latter by Dr. R. J. Millard. The report follows on the lines of previous annual reports from the same sources, and, as one would expect, they display the same degree of excellence that characterises the former reports. Amongst the interesting experiments detailed are experiments on the destruction of rats by means of "Azoa" and "Ratin." "Azoa admittedly contains Danysz's cocco-bacillus put up in a dry form. Ratin, although said to contain a bacillus independently isolated, in point of fact contains an organism which cannot be distinguished by us from Danysz's cocco-bacillus." Azoa was found to have little effect upon rats, in only two instances animals dying evidently from the effects of Azoa. White mice, on the contrary, were readily infected and killed, the organisms being isolated from the organs after death.

In the experiments with Ratin no considerable effect was obtainable. The fatality amongst rats brought about by distributing Ratin plentifully throughout a ship which was kept under observation was small. Some guinea-pigs and white mice died after eating food infected with Ratin. In considering the persistence of plague in Sydney, Ashburton Thomson long ago remarked that there was no need to look to the chronic form of the disease in rats, and there is no evidence suggestive of chronic plague amongst rats. He ascribes the persistence of the disease to the defective wharves affording concealment to a large number of rats, and the authorities are making alterations which will render these wharves rat-proof. He blames re-importation of infected rats as one of the most important factors in the recurrence of plague, and gives instances in which fumigation of ships trading up and down the coasts failed to destroy all the rats carried on board, the rats retreating into compartments to which the sulphur did not penetrate. He describes how these difficulties are being got over. Appendices on plague in relation to convection of the infection by fleas, and another giving the details of a discussion on the present methods of combating plague are also attached to the Report.

Essentials of Sanitary Science. By GILBERT E. BROOKE, M.A.(Cantab.), L.R.C.P.(Ed.), D.P.H., &c. Pp. 413. London and Glasgow: Henry Kimpton. 1909. Price 6s.

THE author of this well-printed book set for himself a very difficult task when he undertook its preparation. In many directions he must be complimented, since he has succeeded in condensing a fund of information into wonderfully small compass. To many students the book will be welcome, especially to those who are adepts at retaining masses of information in their minds for brief periods prior to examinations. The student who knows the contents of *Essentials to Sanitary Science* will get through his exam., but he will assuredly not be able to boast a thorough knowledge of hygiene in all its aspects. The book can be recommended for those who desire a final brush up of their work.

One cannot be hypercritical when dealing with a cram book, Its style of giving information somewhat disarms criticism. Yet one must point out occasional faults that were encountered. Should the book go further, the criticisms may prove helpful. Under the heading of Diseases which Render Meat Unwholesome, liver fluke is mentioned. In the vast majority of cases the fluke is confined to the liver itself, the carcase being passed as fit for human food. This qualification is not made, and a student who says fluke disease renders meat unfit for human food will be counted among those who do

not know their work. Take disinfection as another instance of the danger of condensed information. We are told if steam be *superheated* by pressure, less time will be required for disinfection. This is very faulty and ambiguous doctrine in disinfection. The term superheated is most misleading as used by the author — saturated, he means. Superheated steam is well-nigh worthless as a penetrative agent. No proper differentiation is made between low-pressure and high-pressure steam. The author may think he has made it clear, the student will certainly not grasp the definition as given. Is it not lax to assert that house drains should be from 4 to 9 inches in diameter? Only large institutions demand drains of his latter diameter. Nothing is said regarding joints and the way in which they ought to be made.

In a book of scientific aphorisms one must be scrupulously accurate as to details. Some sections of the book are remarkably well done. The section on vital statistics, for instance, offers information not to be found in many of the more ambitious text-books.

School Hygiene and Laws of Health. By CHARLES PORTER, M.D., B.Sc., M.R.C.P.(Edin.). New Edition. Pp. 335. 121 Illustrations. London: Longmans, Green & Co. 1908. Price 3s. 6d.

THIS edition of Dr. Porter's book has been extended by the addition of a chapter on "Medical Inspection of Schools and School Children," and of appendices extending some of the existing chapters. The book itself is well known as one of the best of those modern text-books which attempt to include within the covers of a single volume elementary anatomy and physiology, school construction and arrangement, a little public health, and as much about the hygiene of childhood, children's diseases and infectious illnesses as a school teacher can be expected to know. We doubt whether this is quite an ideal plan, but it has its conveniences, and Dr. Porter has carried out his task well. The book is closely written and will repay, as it will require careful study by the teacher. One point on which it is open to criticism is, that points of special importance are frequently not specially emphasised, and may therefore fail to impress themselves on an inexperienced reader. Occasionally Dr. Porter almost deliberately misses an opportunity of making a point. For example, we find mention of the danger, in cases of discharging ears, of mastoid infection and death. But why not warn the teacher that if a child comes to school, as children do occasionally come to school, with swelling and tenderness behind one ear and the ear sticking out from the side of the head, that the child is probably in great danger and should have surgical advice at once. If such a warning had been given, with an illustration of a

typical case of mastoid abscess to impress it upon the reader, there can be little doubt that before long some child would have reason to bless Dr. Porter.

Again, in the directions for testing the eyesight with Snellen's type, there is not a word of warning that children whose vision is $\frac{6}{6}$ may yet not have normal eyes. If teachers are to be trusted to use Snellen's types at all, why should they not test each child with a + lens? The chief object of testing the eyesight of young children should be to discover the hypermetropes. It will be deplorable if teachers get the idea that a child whose vision is $\frac{6}{6}$ need not have its eyes tested by a doctor.

The section dealing with the care of the eyes needs some amplification. The direction that "The print employed for school-books should be such as will ensure the book being held no nearer to the eye than 10 to 12 inches" is curious. We should like to know what print is capable of doing this! Examples of *pica*, *double pica* and *longprimer*, which are mentioned, might usefully have been given.

On the vexed subject of school ventilation, Dr. Porter is one of the advocates of the mechanical system, and scarcely does justice to the possibilities of natural ventilation. Yet Dr. Reid's experiments with the Staffordshire type of school seem to prove that excellent ventilation can be secured by natural means.

We notice that in the preface to this edition no claim is made that the book has been revised throughout. Perhaps this was not considered necessary, as the first edition appeared so recently as 1906. But there are many places where small corrections and additions, such as we have suggested, might be made, and, as the book is an excellent one, we hope the author will spare no pains to improve the future editions which will doubtless be called for.

Management and Construction of Poorhouses and Almshouses. By GEORGE A. MACKAY, of the Local Government Board. Pp. 267. Edinburgh: William Green & Sons. 1908. Price 15s.

THIS handsome, well-got-up book, with numerous plans and illustrations of poorhouses, comes at a very opportune time—when the whole subject of Poor Law administration in England and Scotland is under consideration. It is written by one who, from his official connection with the Scottish Local Government Board, has had full opportunity of becoming acquainted with all phases of pauperism, poor laws and poorhouses. There are ten chapters and an appendix, and in these full information is given of the formation and management of poorhouses; of the treatment of mental diseases in these, dietary and book-keeping, almshouses and casual sick houses, &c., &c.

Special reference must be made to the chapters written by Dr. John Macpherson on the Lunatic Wards of Poorhouses, and by Dr. Johnston on the Duties of Medical Officers to Poorhouses, and to the chapters on Legal Decisions as being of special importance to those concerned with Poorhouses and Poor Law. Excellent illustrations of well-designed poorhouses greatly increase the practical value of a volume which will greatly assist governors, medical officers, parish councillors, and others connected with Poor Law administration.

Monographs on Biochemistry. Edited by R. H. ADERS PLIMMER, D.Sc., and F. G. HOPKINS, M.A., M.B., F.R.S. London: Longmans, Green & Co.

The Nature of Enzyme Action. By W. M. BAYLISS, F.R.S. Pp. 90. Price 3s.

The Chemical Constitution of the Proteins. By R. H. ADERS PLIMMER, D.Sc. In Two Parts. Part I., pp. 100, price 3s.; Part II., pp. 66, price 2s. 6d.

THESE books are the first three volumes of a series of "monographs on biochemistry." This series, which is edited by Drs. Aders Plimmer and Hopkins, is intended to take the place of a standard text-book on biochemistry. By publishing the various chapters of the subject separately in book form it will be possible to keep this series up to date more easily and to avoid the fate which befalls most of the larger text-books, which are often out of date before their publication is complete.

This series opens with a monograph by Professor Bayliss on the nature of ferment action. This is a subject which by the collaboration of the physicist, the chemist and the physiologist has been advanced during the past decade, more, perhaps, than any other biochemical subject. Of the numerous articles and books which have been written lately on this difficult subject, none gives such a lucid and concise presentation as this treatise does. Although the 74 pages of this monograph contain references to almost 200 papers, the material is arranged so well that the book makes pleasant and interesting reading.

The author has confined himself to the consideration of the general characters of enzymes, and does not deal at all with the individual properties of the numerous specific enzymes already known. The physico-chemical processes of catalysis and of adsorption, which have such an important bearing on the subject of enzyme action, are fully discussed. A special chapter is devoted to the discussion of the nature of the combination between enzyme and substrate, and the

conclusion is arrived at that we have to deal here with the phenomenon of colloidal adsorption, a simpler case of which is represented by the adsorption of congo-red from its watery solution by filter-paper. The very interesting and important observations which have been made during the last few years on the synthetic action of enzymes, on the existence of co-enzymes and anti-enzymes, and on oxydative processes brought about by the action of enzymes are fully gone into.

In another monograph of this series Dr. Aders Plimmer treats of the constitution of the proteins. In this monograph, which is published in two parts, a very full account is given of the recent work done on this subject, especially by Emil Fischer and Abderhalden.

By a systematic investigation of the substances which are formed when proteins are hydrolysed by boiling with dilute acids, it has been possible to define chemically the "units" of which the protein molecule is built up. Of these "units"—the amino acids—eighteen have hitherto been isolated. The methods by which the individual amino acids are isolated from the mixture which results when protein substances are hydrolysed by dilute acids, and the discussion of the chemical constitution and the properties of these amino acids are given in Part I.

Part II. treats of the attempts which have been made to synthetise proteins by joining together the amino acid "units." A great number of such combinations of amino acids, which have received the name of "polypeptides," have been prepared, and as many as eighteen amino acids have been linked together. Some of these polypeptides resemble some of the simpler protein substances in many respects. The various methods by which polypeptides have been prepared are given in detail, and the properties and structure of the polypeptides are described. Some of these polypeptides are split up by trypsin and other proteolytic enzymes into their constituent amino acids, while other polypeptides are not attacked at all by these enzymes. The conditions which determine whether a polypeptide can be hydrolysed by these enzymes or whether it remains intact are fully discussed in a very interesting chapter.

A complete bibliography is appended.

The whole subject is highly technical, and the form in which it is presented appeals not so much to the biologist as to the chemist.

Intra-cellular Enzymes. A Course of Lectures given in the Physiological Laboratory, University of London. By H. M. Vernon, M.A., M.D. Pp. 240. London: John Murray. 1908. Price 7s. 6d.

Endoenzymes are enzymes which are intimately bound up with the protoplasm of the cell. During life their activity is limited to the

interior of the cell, and it is only after the death of the cell that their activity can be demonstrated *in vitro* by the zymolytic action of the cell juice or of fractions of it. These intra-cellular enzymes are thus clearly distinguished from the secreted enzymes, such as pepsin, trypsin or amylopsin, which are destined to act outside the cell and which can be easily extracted from the cell.

While the secreted enzymes have been known and studied for a long time, we owe our knowledge of the endoenzymes almost entirely to the work of the last ten years. The book fulfils a useful purpose in collecting from the literature the numerous observations and records on the subject of the intra-cellular enzymes. Most of the work on endoenzymes has been done by studying the action of the pulp of organs, or of the juice obtained from such a pulp by the application of pressure, on chemical substances. Very important results have been obtained in this way, and our knowledge of the function of the various organs has been considerably advanced. The conversion of the purin bases into uric acid by the endoenzymes of the liver and spleen, the formation of urea from arginin by an endoenzyme of the liver may be given as examples. At the same time, our knowledge of the subject is as yet so fragmentary and incomplete, and the results obtained by various workers are often so contradictory, that there is at present more need for thorough and careful work than for the far-reaching speculations of which the author is unfortunately too fond. From some observations of his own he evolves a conception of the constitution of the living molecule or biogen. "The endoenzymes," it is stated "appear to be bound up in the tissues in somewhat the same way as the side chain receptors." Every protein constituent of a biogen is also a side chain, "and the central nucleus of a biogen consists only of the general mass of side chains to which the particular side chain under consideration is attached." The "endoenzyme receptors" are stated to increase in number when the cell is functionally active. The mechanism of this "regeneration of endoenzyme receptors" is explained by supposing that "the tissues build them up synthetically by means of their series of proteolytic enzymes. The blood-stream contains small quantities of all the various amino acids of which a protein is constituted, and the endoenzymes of the biogens must seize upon these amino acid molecules, one by one, as they are required, and build them up together in accordance with some definite pattern which is already laid down in the tissues." We are unable to attach any meaning to the semi-scientific vernacular in which the author expresses his speculations. As to the statements on which he bases his conception of the living molecule, they are either purely hypothetical or disputed or disproved.

THE third edition of the *Pharmacopœia of the Royal Infirmary, Edinburgh* (Edinburgh: James Thin, 1908, price 2s. 6d. nett), resembles its predecessors in outward appearance, and contains, in addition to the old, well-tried formulæ, a number of new recipes. As in previous editions, the formulary of the Sick Children's Hospital is included, and the whole forms a useful and convenient reference book for prescribers.

A System of Syphilis. In Six Volumes. Edited by D'ARCY POWER M.B.(Oxon)., F.R.C.S., and J. KEOGH MURPHY, M.D., C.M. (Cantab.), F.R.C.S., with an Introduction by JONATHAN HUTCHINSON, F.R.S. Vol. I. London: Henry Frowde and Hodder & Stoughton. 1908. Price, £2, 2s. nett each volume.

THE handsome volume now under consideration is the first of six to be devoted to a consideration of the protean aspects of syphilis. The appearance of such a comprehensive system of syphilis is peculiarly well timed, as the recent discovery of the causative organism enables us to view this disease from the same standpoint as we do the other infective granulomata. In May 1905, Fritz Schaudinn, a zoologist in Berlin, announced his discovery of the *Spirochæta pallida* in syphilitic lesions, and his subsequent work, carried out in conjunction with E. Hoffman, an expert in syphilology, soon confirmed his belief that this organism is the essential cause of the disease. There is a touch of sadness in the fact that the work under review could only be dedicated to the memory of Schaudinn, as this gifted scientist died in 1906 at the early age of thirty-five.

Despite the remark in the introductory chapter to the effect that for the present there are no indications that any important modifications of doctrine or practice will follow on Schaudinn's discovery, we venture the opinion that the discovery of the spirochæta pallida stands in the same relation to syphilis as that of the tubercle bacillus does to tuberculosis, and we would hope that the practical results with regard to prophylaxis and treatment will in course of time be no less striking. Doubtless it is true that, regarding a disease which has been so minutely observed in all its clinical aspects, and so thoroughly studied in its sociological bearings, we need not expect any revolutionary change in our conceptions of its clinical characteristics, but that we may in the course of years observe a gradual alteration in the type of the disease, similar to that which has almost imperceptibly come over surgical tuberculosis, is, we think, highly probable. Even in the pages of the volume now before us we fancy we see evidence of a wider and clearer outlook on the disease as a whole. Each and all of the writers accept the spirochæte as the essential cause of the disease, and their various contributions gain in consistency and consecutiveness by having a definite basis.

It was only fitting that the introduction to such an important contribution to the literature of syphilis should be from the pen of the illustrious "father of modern syphilology in England," and we cordially join with the editors in rejoicing "that he has lived to see syphilis founded on a sure basis of experiment, and freed for ever from the charlatanism which has long surrounded it." The share which Sir Jonathan Hutchinson has had in preparing the way for this culmination has long been recognised by his *confrères* and has now been formally acknowledged in the highest quarters. That he may long live to enjoy this satisfaction in his life-work, and the honours it has brought him, is our sincere wish, a wish shared in by every member of the profession he adorns.

Sir Jonathan Hutchinson has avoided writing a consecutive essay on syphilis, and has endeavoured rather "to suggest lines of profitable thought and future enquiry." This he has done so tersely and yet so comprehensively that his epitome of the subject inevitably suggests the idea of an overture. In the succeeding chapters his themes appear again and again, developed and varied by the different writers, but always recognisable and harmonious. His firm belief in the predominant value of clinical observation, his earnest desire, at the same time, to avoid raising antagonism between it and experimental and histological research, and his general tone of hopefulness, are characteristic of the man.

The section on the "History of Syphilis" has been contributed by Dr. Iwan Bloch of Berlin, who stands pre-eminent as an authority on the subject. His minute analysis of the evidence bearing on the introduction of syphilis to Europe furnishes most fascinating reading, and he seems to us to prove conclusively that syphilis was unknown in Europe before the year 1493. The crew of Columbus became infected with the disease in Haiti, and after their arrival in Barcelona in 1493, syphilis spread among the inhabitants there with great rapidity. The following year Charles VIII. of France began his great campaign, and among his mercenaries were many Spaniards infected with syphilis. By them the disease was carried to Italy, and soon it had spread over the greater part of Europe. English soldiers who had been fighting as mercenaries in Italy, on their return home in 1497, introduced the disease to England; and in September of the following year "James IV. published a decree ordering all persons suffering from syphilis to leave Edinburgh. They were to be taken to an island opposite Leith, and there to be treated. Any of them found in the town were to be branded on the cheek."

The great discussion as to the identity of the different venereal disorders is fully detailed, and among those who are credited with having shared in unravelling this tangled subject we note with interest two names famous in the annals of the Edinburgh School—Andrew Duncan, senior, and Benjamin Bell.

The history of modern syphilology, which began with Phillipe Ricord (1800-1889), is briefly traced down to the discovery of the spirochæte by Schaudinn, and the successful transmission of the disease to monkeys by Metchnikoff and Roux. The author concludes that "These discoveries open entirely new prospects for the prophylaxis and treatment of syphilis, and the history of the disease herewith passes into a new and, it is to be hoped, a final phase."

In a brilliantly written essay Metchnikoff deals with "The Microbiology of Syphilis," and traces back to times when micro-biology itself could not be said to exist as a science, the belief that the real cause was to be found in certain minute organisms which occurred in syphilitic lesions. In illustration he points out that in 1837 a French observer, Donné, discovered certain organisms in chancres, which he compared to vibrios, and which Metchnikoff believes probably corresponded to the organism now known as the *Spirochæta refrigerans* of Schaudinn. By a series of carefully planned experiments, Donné himself, however, disproved that this vibrio was the cause of syphilis.

The impetus given to the study of bacteria by Pasteur's work led to further inquiry regarding the virus of syphilis, and between 1885 and 1906 claims were successively put forward for the bacillus of Lustgarten, the streptococcus of Kassowitz and Hochsinger, the diplococcus of Disse and Taguchi, and the "general hotch-potch of every kind of impurity introduced into a nutritive medium" of Max von Niessen. Each of these, however, had to be discarded on fuller investigation. The claims of the spirochæta pallida are fully set forth and critically examined by Metchnikoff in this article, and he concludes, that although the micro-biology of syphilis cannot be considered as a closed chapter, the organism of Schaudinn is indeed the microbe of syphilis.

A masterly exposition of "The General Pathology of Syphilis" is furnished by F. W. Andrewes, and in this section, more perhaps than in any other, do we trace the influence of Schaudinn's discovery in classifying our views on the nature of the disease. The writer's lucid descriptions of the histology of the various lesions throw much light on the clinical aspects of the disease. After discussing the problems of immunity in syphilis, Dr. Andrewes expresses himself as hopeful that it may yet be possible to employ an alienated virus as a vaccine.

"The Primary Lesion and Early Secondary Symptoms of Syphilis as seen in the Male" are described by Col. F. J. Lambkin, with his usual directness and precision. If there is less that arrests attention in this article than in those which precede it, it is merely because the clinical aspects of the disease have already been so minutely studied and so fully described that there is little new to add. Without desiring to be captious in our criticism, we venture to doubt if the tables of diagnostic points between chancre and chancroid, between syphilitic sub-preputial chancre and sub-preputial non-syphilitic ulceration, and between labial

chancre and labial epithelioma add to the educational value of the article. The completeness and discrimination of the descriptions in the text render them unnecessary, and the differentiation in the tables is too rigid to agree with clinical experience. The fact is that the symptoms of different diseases refuse to conform to the conditions of comparative tabulation.

It was a happy thought on the part of the editors to ask Mr. Arthur Shillitoe to contribute an article on the "Primary Lesion and Early Secondary Symptoms as seen in the Female." We cannot recall having seen any contribution to the literature of syphilis which brings out with such admirable clearness the striking differences in the clinical manifestations of this disease in the two sexes. As an example of the difference of opinion which may exist on a most important matter between observers of exceptional experience and scientific acumen, we may cite the views expressed by Sir Jonathan Hutchinson and Mr. Shillitoe respectively on the question of administering mercury before a definite diagnosis of syphilis has been made. On page xxxiv., Sir Jonathan Hutchinson speaks of "the antiquated and most mischievous rule of practice which enjoined waiting for the appearance of secondary symptoms before commencing specific treatment. . . . Mercury is helpful to many persons who do not suffer from syphilis, and hurtful to very few." Mr. Shillitoe (p. 274) says: "Under no circumstances should a course of anti-syphilitic treatment be started before a definite diagnosis of syphilis shall have been made." It is true he does not postulate the appearance of secondary symptoms as essential to a definite diagnosis, but in a certain proportion of cases it is only with the appearance of the rash that doubt is removed. We do not profess to regret this expression of divergent views. It only serves to prove that no rigid and arbitrary rule can be laid down, and that the practitioner must be guided by all the circumstances in doubtful cases.

The final chapter in this volume is by George F. Still on "Congenital Syphilis." It is a veritable mine of information on the subject, and although the author finds occasion to differ on many points from other authorities, he seldom fails to carry conviction to the mind of his reader, alike by the breadth of his views, his clear scientific reasoning, and the evidence he furnishes of extensive personal observation.

The excellence of the text of this work is only equalled by the high standard of the illustrations. Those that first arrest attention are the direct colour photographs of clinical appearances, which may be fairly said to reach the high-water mark of text-book illustrations. Although only of quarter-plate size, they stand comparison with many of the large plates in special atlases. The coloured reproductions of microscopic preparations, and the half-tone blocks of pathological sections and clinical photographs are of the highest standard of excellence. The historical article is illustrated by a series of reproductions of interesting

old prints and engravings, including what is believed to be the earliest illustration of the disease—the title-page of Bartholomew Steber's treatise on syphilis, published in 1497; and a portrait of Jerome Fracastoro, from whose poem, "Syphilis sive Morbus Gallicus" (1530), the new disease obtained its name.

We have said enough to indicate that we consider this work one of outstanding importance, and, while it would be rash to predict that it will constitute the last word on syphilis, it is safe to assume that it will remain the standard work on the subject for many years to come. We offer our cordial congratulations to the editors, Mr. D'Arcy Power and Mr. J. Keogh Murphy, on the conspicuous success which has attended their labours.

Abdominal Tuberculosis. By A. Ernest Maylard, Surgeon to the Victoria Infirmary, Glasgow. Pp. 360. London: J. & A. Churchhill. 1908.

Mr. Maylard has done a great deal towards building up the surgery of the abdomen on a sound basis, and has laid many of his professional brethren under a deep obligation for information gained in the perusal of his works. The present volume fully maintains the high standard which characterised the *Surgery of the Alimentary Canal* and *Abdominal Pain*. It is on a scale which permits of a thorough consideration of the pathological aspects of abdominal tuberculosis, of a full account of the clinical features, and an impartial review of the methods of treatment, both medical and surgical. There is an elaboration of argument and minuteness of pathological detail beyond what is generally sought after by readers of year-books, summaries and abstracts, but these are qualities which we have learned to appreciate in Mr. Maylard's writings, and which render them valuable works of reference. The type, paper and illustrations are all that could be desired.

A Text-Book of Minor Surgery. By Edward Milton Foote, A.M., M.D., New York. 407 Engravings. Pp. 752. 8vo. London: Sidney Appleton. 1908. 21s. nett.

This large book deals regionally with the diagnosis and treatment of minor surgical affections, and includes chapters on Operative Technique, Bandaging and Surgical Dressings. Emphasising as it does the more recent principles of operative surgery, it is especially designed to meet the wants of the practitioner who has had no opportunity of observing the treatment of out-patients in a modern surgical hospital. But for him its value is somewhat impaired by the insufficient discussion of emergency cases and of the dangerous complications that may arise in the course of minor ailments and accidents. Post-operative treat-

ment and anæsthesia, local and general, might also have received more attention. The entire absence of any reference to Bier's hyperæmic treatment is notable. On the other hand, the sections dealing with infections of the hand and ulcer of the leg will be found extremely useful. The illustrations, of which some three hundred depict surgical affections and another hundred refer to technique, are original and uniformally excellent. The index is so incomplete as to be almost worthless.

Post-Operative Treatment. By NATHAN CLARK MORSE, Surgeon-in-Chief to Emergency Hospital, Eldora, Iowa. Second Edition. Pp. 499. London: Rebman, Ltd. 1907. Price 17s. 6d.

THE exhaustion of the first edition of this work within twelve months of its publication is the most reliable evidence of its usefulness. The second edition has been revised and all recent advances which, in the author's personal experience are worthy of acceptance, have been added, together with several new illustrations. We cordially recommend the work to house surgeons and charge nurses.

Cholecysto-Pancreatite. Par le Docteur REINE MAUGERET. Pp. 150. 3 Plates. Paris: G. Steinheil. 1908.

IN this monograph Maugeret follows the progress of our knowledge of the etiology and morbid anatomy of pancreatitis, and discusses the various theories which have been advanced from time to time in explanation of its causation, such as—

(1) Obstruction of the duct of Wirsung; (2) extension of inflammation from the stomach and duodenum along the same duct; (3) extension of inflammation from the bile duct to the pancreatic duct.

Klippel in 1899 showed that there was a *fourth* possibility, viz. infection by way of the lymphatics.

Professor Thiroloix, who was of opinion that the last method was the most rational, suggested that Maugeret should investigate the question from this standpoint. The literature is considered in full, justice being done to the work of Mayo Robson, Moynihan in England, and Opie, Mayo and others in the United States. A series of experimental investigations were carried out on the dog. Maugeret concludes that pancreatitis occurring at the same time as cholelithiasis is not an independent affection but a real complication of it. It does not originate either directly or indirectly by infection from the intestine. Infection does not reach the pancreas along the ducts or by direct contact. In all cases inflammation of the gall-bladder is a constant feature, and infection is carried thence to the pancreas along the efferent

lymphatics of the gall-bladder, which pass to glands in the neighbourhood of the head of the pancreas. These also receive the efferent lymphatics of the pancreas, which anastomose freely with those coming from the gall-bladder.

The Principles and Practice of Gynæcology, for Students and Practitioners. By E. C. Dudley, A.M., M.D. Fifth Edition. Revised and Enlarged. Pp. 806. London: Henry Kimpton. 1908. Price 25s. nett.

The fact that a fifth edition of this work has been so soon called for shows how much it has been appreciated. And for much in it we have nothing but praise. The operative parts are exceedingly well done and well illustrated. Dudley's name is associated with an operation on the cervix for dysmenorrhœa, and in this addition he describes a useful modification of Gilliam's operation for shortening the round ligaments, and an operation for "advancing the urethra" in cases of incontinence of urine in multiparæ.

The weak points of the book are its anatomy and pathology, and as these form the groundwork of gynæcology, we question whether the work is a good one for students, however useful it may be to the operating gynæcologist.

As regards illustrations, the drift nowadays is towards pictures in red and blue of a quasi-anatomical character.

The reader thinks he is getting an exact reproduction of an anatomical specimen or section, and finds he is only looking at what the clinician thought he felt in a particular case. We have wandered very far from William Hunter's method of giving "a faithful representation of what was actually seen." We are satisfied instead with what he aptly described as "a representation of the object under such circumstances as were not actually seen but conceived in the imagination."

While there is too little accuracy in the treatment of anatomical and pathological material, there is too much realism in the illustration of operative procedure. A large photograph is given where a simple diagram would do the work better. There is too much of the gloved hand of the operator and the instruments and too little of the bit of tissue at the point of the knife, which is the only object of importance.

Practical Gynæcology. A Manual for Nurses and Students. By Netta Stewart, Sister in the Gynæcological Ward, Royal Infirmary, Edinburgh, and James Young, M.B., F.R.C.S.E., Clinical Tutor, Royal Infirmary. Pp. 327. Numerous Illustrations and Plates. Edinburgh: Oliver & Boyd. 1909. Price 5s.

This is a book we can cordially and unreservedly recommend. The style of the work is excellent, and the subjects are handled with

admirable discrimination. From the nurse's point of view, she will find, expressed in simple, clear and definite language, all she ought to know respecting her special duties, with just such a judiciously sparing modicum regarding the nature and evidence of the disease for which the operation is necessary, as will enable her to perform her work with greater intelligence and accuracy, without the risk of a swollen head. For her it is an excellent manual, but to the student it must be regarded in one sense as only a primer, though useful as that. Wherein to him, and to many a practitioner as well, its chief value lies, is just where most of the special text-books are deficient—the preparation of the patient before and the management after an operation, with all the delicacy, niceties, and aseptic and antiseptic precautions necessary for a successful recovery. The technique of nursing is as important as the technique of an operation—a fact that rarely reaches the student mind. They have not the same facilities of becoming familiar with the former as with the latter; and hence the value of such a manual as this. Every medical student should possess it. Examiners here take a hint.

An Obstetric Diary of William Hunter, 1762-1765. Edited, with Notes by J. Nigel Stark, M.D., F.F.P.S.G., Surgeon, Royal Samaritan Hospital for Women, Glasgow. Reprinted from the *Glasgow Medical Journal*. Pp. 55. Glasgow: Printed by Alex. Macdougall. 1908. Price 1s.

Dr. Stark has contrived to invest this old obstetric diary with a great deal of interest, and, considering the times and the people with which it deals, and the skill and research which the editor has brought to the work, this is not astonishing. The three babies whose births are recorded in the Diary grew up to be King George IV., Frederic, Duke of York, and King William IV., respectively. Their mother was Queen Charlotte; and Dr. William Hunter was forty-four years of age when, in 1762, he was appointed to attend her in her first confinement. The attendance was almost nominal, for the mid-wife (Mrs. Draper) delivered the child, and Hunter hung about in an ante-room till parturition was over. Dr. Stark has many reflections to make on the obstetric customs of the time, on the relations between midwives, doctors and Royal patients, on the medicines in vogue, and on the food given in the puerperium; and these reflections, interestingly stated and full of thought, make this pamphlet one which the general practitioner as well as the obstetrician may peruse for an hour or two with pleasure as well as with profit.

THE QUANTITEST CASE issued by the Roborat Company (price 33s. per case) contains some new, ingenious, and eminently practical methods for the quantitative examination of various substances in the urine and gastric contents. The various pieces of apparatus and reagent bottles are packed in a neat black leather box.

For *urea*, the double tube modification of the Doremus ureometer with hypobromite of soda solution is supplied.

For *sugar*, there is a form of fermentation saccharometer in which the pressure of the gas evolved by adding a little dry yeast raises a column of mercury upon a scale graduated in percentages of sugar present. The scale is read at the end of twenty-four hours. This tube has the great advantage over Einhorn's tube, that the amount of urine to be fermented remains constant instead of being forced out as the quantity of gas increases, a fact which introduces an element of fallacy in the latter.

For *albumin*, a colorimetric test (Harrower's tube with phospho-tungstic acid) is employed, and though this is not so simple as the Esbach method, it gives the result at once and purports to be more accurate. Regarding the justice of the latter claim we could not, however, satisfy ourselves.

For *uric acid*, a quantitative colorimetric test is afforded by Ruhemann's tube, with bisulphide of carbon and an iodo-iodine solution. Although the tube requires to be vigorously shaken after the addition of each few drops of urine, so that the test is somewhat tedious, we found, by examination of urine containing a known quantity of uric acid, that the result was in the end very reliable.

For *phosphates*, a simple form of sedimentation tube is provided by which the percentage amount of phosphates in the urine is recorded, and by another tube the presence of *indican* is readily determined.

Undoubtedly the most ingenious instrument in this very useful case is an *acidity tube* bearing two carefully graduated scales, one inscribed in red and the other in yellow figures. By its means, the practitioner can in a few minutes estimate both the HCl. acidity and the total acidity of gastric contents from one sample. The material to be examined is filled into the tube up to a given mark and a drop of a mixture of phenol-phthalein and dimethylamidoazobenzol is added. The fluid (if HCl. be present) turns red. Decinormal soda solution is now added till the colour (of the dimethyl solution) becomes canary yellow. At this point the HCl. scale is read off. The addition of decinormal soda solution is continued, and causes the fluid again to redden (owing to the phenol-phthalein) when all the acidity is neutralised. A reading of the total acidity scale is now made. The speed with which the percentages can be read off, no less than the extreme accuracy of the method, is surprising.

The case contains several other things, *e.g.* densimeter, test papers,

&c., similar to those in common use. It would perhaps have been advantageous had the solutions been placed in stoppered bottles and had some of these, *e.g.* that containing decinormal soda solution, been larger, but these are trivial defects. The methods adopted are extremely simple, easily learnt, and, as we were able to assure ourselves from testing known quantities of the substances in question, very accurate. The case should prove of great advantage to practitioners beyond the reach of a laboratory and anxious to obtain quickly exact quantitative information.

Reagent Tablets.—Messrs. Merck issue some very useful tablets for the estimation of sugar and albumin in the urine.

For *sugar*, two tablets containing the ingredients of Fehling's solution are dissolved in water, and, being carefully standardised, are equivalent to ·01 grammes of glucose. These constitute an easily portable form of the substances required for this test, while, to persons making quantitative estimations only occasionally, they should be invaluable because of the fact that they do not deteriorate with lapse of time.

For *albumin*, tablets of Esbach's Reagent (picric acid) are made up, and by dissolving two of these in a few cubic centimetres of water, a saturated solution may be readily obtained for addition to the urine. Tablets of Riegler's Reagent (beta-naphtalene-sulphonic acid) are somewhat slow in dissolving, and form not quite so sensitive an indicator.

A more useful test is that afforded by tablets of citric acid and ferrocyanide of potassium. A tablet of the former (Tube A) is added to about 10 c.c. of urine and into this is dropped a solution made by dissolving a tablet from Tube B in 1 c.c. of water. These tablets dissolve very quickly and show exquisitely this most delicate of reactions for albumin.

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

We regret very much that, owing to the illness of Dr. Ritchie, the publication of the second portion of the case of *Sir William Gairdner* must be postponed to next month.

Teaching and Examining in the Edinburgh Medical School.

In a long-established Medical School like Edinburgh there comes a time when tradition and custom become serious obstacles in the path of reform. Methods of teaching which for generations have fulfilled a useful mission are apt to be regarded as the best for all time. No better example exists than the attitude in which the systematic lecture is regarded as an educational instrument. It was formerly unavoidable that a student should spend a large part of his time in listening to and in making notes of the systematic lectures of his teachers in the different departments of medical study. It was the only available means of imparting instruction. With the progress of years it became such an established institution that anyone who expressed doubts of its educational value laid himself open to a charge of heresy if not of disloyalty to his alma mater. It would seem that the art of printing has not made its influence felt in medical education as it has done in other branches of knowledge. No one in authority seemed to doubt the wisdom of the Edinburgh medical student continuing to write to dictation for a greater number of hours *per diem* than remained available to him for other methods of acquiring knowledge.

We have long held the opinion that the systematic lecture has become a stumbling-block, if not a stone wall, in the advancement of medical education. It not only encroaches to a disproportionate extent on the time and energy of those whom it is intended to instruct, but it cramps independence of thought, narrows the range of knowledge, and fosters the impression on the part of the student that if he learns his lecture notes by heart he will have the best possible chance of successfully passing his examination in the subject. It may be urged that Edinburgh acquired a great deal of its fame in past times

from the brilliancy of its lecturers and the excellence of their systematic instruction. That Edinburgh has well deserved its laurels as a centre of medical teaching no one will deny, but we believe that its continued success is achieved in spite of, and not because of, its adhesion to this old-fashioned method of imparting knowledge. The typical systematic lecture may be described as academic or legitimatised cramming, and cannot certainly be regarded as of the educational importance which it is made to occupy in the Edinburgh Medical School. The lecture theatre should be reserved for the teaching of those things which the student cannot learn elsewhere or cannot understand from his text-book. These reflections naturally occur to anyone who, having been brought up in the traditions of the Edinburgh Medical School, visits the teaching centres in other countries; we have been led to give expression to them by the article in this month's issue by Dr. Byrom Bramwell. We trust it will receive the consideration which it deserves, and we rejoice that, at last, a teacher of Dr. Bramwell's eminence and experience has ventilated the subject and put his finger on the weak spots in our methods. Reform there must be, and in the forefront must be placed the necessity of a greater amount of time being spent on bedside study and in practical work. This must be provided for and rendered possible by a revision of the curriculum and of our system of teaching, and must be made compulsory by alterations in the arrangements of the professional examinations.

Professor Chiene.

PROFESSOR CHIENE'S friends will be glad to hear that his health shows some improvement. He has received further leave of absence from the University, and the arrangements for carrying on his work at present in existence will be continued. Mr. Wallace will conduct the class of operative surgery, and Mr. Alexis Thomson the clinical.

The Projector in Surgery.

THE facilities afforded students for observing the details of operations have exercised the minds of teachers from time immemorial. A decided advance in this direction has been rendered possible by the invention of Dr. Charles A. Duncan of New York, as by means of it a bird's-eye view of the operation is projected on a screen in an adjacent room. About eighteen inches above the heads of the operators is a large disc furnished near its periphery with a series of electric lights, while in the large central opening of the disc there is an inclined mirror, which, by means of another mirror and a lens, projects the image upon a suitable screen hanging upon the wall of an adjoining class-room. Here the students, thus fortunately excluded from the operating theatre, can have the details of the operation explained to them by one of the junior teachers. The projector also permits of a single or a series of photographs being

taken of the operation while it is in progress, so that a record can be preserved for publication or for future demonstration. It will thus be possible, as is the case with the phonograph in the preservation of voice records of great singers, to hand down to posterity the achievements of the world's greatest surgeons. If kept within its legitimate sphere of usefulness, we anticipate that the apparatus may prove of service to students, and probably of great value to those who are specially training themselves for the practice of surgery, but it is hardly necessary to point out that such methods are very liable to abuse.

Daylight Saving.

We fancy that, when it was first brought to their notice, most persons regarded the proposal summed up in these two words as a somewhat ponderous joke. But the more one considers the proposal the less ridiculous it appears. Briefly, it amounts to this: that on the first Sunday of April in each year instead of rising as usual an hour later, we shall get up at the same hour as the day before, only we shall call eight o'clock nine. During the whole six months of the summer we shall thus rob the morning of an hour and pay it back to the night, until on the last Sunday in September, when on waking up we shall realise with relief that we have an extra hour to spend in bed and things are back as before. The medical importance of the proposal lies in the fact that all of us will have an extra hour of daylight, possibly of sunlight, which we will be more likely to spend, to our health's good, in the open air.

Appointments.

Dr. Stuart M'Donald, Lecturer on Pathology in the New School, has been appointed Lecturer on Pathology in the Newcastle School of Medicine, and Pathologist to the Royal Victoria Infirmary. Dr. M'Donald has been a most popular teacher in the Extra-Mural School, and his many friends will learn of his promotion with satisfaction, and wish him success in his new post.

Drs. J. Carslaw and J. S. M'Kendrick have been appointed Assistant-Physicians to the Western Infirmary.

Dr. John H. Teacher has been appointed Pathologist to the Glasgow Royal Infirmary. In view of the imminent changes in the relations of the Royal Infirmary to the University, there has been keen competition for this post. Dr. Teacher is well known by his brilliant work on Chorion-epithelioma.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE Quarterly Examinations of the above Board, held in Edinburgh, were concluded on 19th April, with the following results :—

The following candidates passed the *First Examination* :—

Samuel Wright, Belfast; Claud Aldous Slaughter, Secunderabad; Jamshed Hirjibhoy Appoo, Bombay; Hormazd Ardeshir Topalia, Bombay; Joseph Muller, Bombay; Walter Lessey, Grenada; Bhajiwalla Framroze Limji, Bombay; James Gurney Lessey, Grenada; Hugh George Anderson, Calcutta; Vasudeo Dinkar Nimbkar, India; Sara Aloysia Anthoni, Calcutta; Robert Baillie Galt; Evan Ithel Parry, Pontycymmer; and William Bird, Cheshire; and 6 passed in Physics, 3 in Biology and 10 in Chemistry.

The following candidates passed the *Second Examination* :—

Robert Howie Thomson, Fife; Stanley Dermott Large, Antrim; Alexander Edward Mackenzie, India; Frederick Richard Lucas, Dalkeith; John Richard Smith, Carlisle; Arthur Butterfield, Oldham; Octavus Walter Bateman, Cork; William Forsyth Gibb, Dundee; Thomas Robert Gray Melrose, Edinburgh; Frank Davidson Johnson, New Zealand; Kedar Nath, India; Victor Thomas William Eagles, Bangalore; James Alfred Frost, Glenbrook; John Ross, Skye; Emmanuel Prionath Ghose, India; Husain Buksh, India; Prabooth Chandra Banerjee, India; William Woodthorpe Williams Watt, Aberdeen; and 2 passed in Anatomy and 9 in Physiology.

The following candidates passed the *Third Examination* :—

Joseph Muller, Bombay; Charles Gordon Timms, Melbourne; Robert Murray M'Cheyne Wilson, Victoria; Baboorao Gangadhar Shiroadkar, Bombay; Charles Langley Ievers, Co. Clare; Richard Parry, America; Jugal Kishore Sharma, India; and 5 passed in Pathology and 6 in Materia Medica.

The following gentlemen passed the *Final Examination* and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P.&S.G. :—

James Robert le Touzel, Canada; Charles Liston Stewart, India; Hargobind Lal Batra, India; Bhola Nath, India; Charles William Gee, Wigan; Thomas Mohan, Ireland; Harold Webb Garcelon, America; William Rutherford Waddell, Belfast; Claude Ernest Watts, Dewsbury; Frederick Robert Watson, New South Wales; Stanley Welton Hogg, New South Wales; John M'Kelvey, Belfast; Henry Hollister Jackson, Victoria; Alexander M'Murray, Belfast; Albert Edward Herat, Ceylon; William Whitfield, Ireland; Robert George Sherlock, Jamaica; James M'Turk, Wales; Andrew Johnstone Brown, Edinburgh; Jehangir Munchershaw Mehta, Bombay; Jal Maneckji Mody, Bombay; Thomas Graham Shand, Greenock; Ralph Holwell Gray, Hants; Kharshed Nowroji Khory, India; Martin Luther Burke, Jamaica; Thomas James George, England; Jehangir Edulji Spencer, Hydrabad, Deccan; and 8 passed in Medicine and Therapeutics; 12 in Surgery and Surgical Anatomy; 22 in Midwifery and 25 in Medical Jurisprudence.

THE TEACHING OF MEDICINE AND CLINICAL MEDICINE IN THE EDINBURGH MEDICAL SCHOOL; SYSTEMATIC LECTURES, HOSPITAL WORK, EXAMINATIONS; SUGGESTED ALTERATIONS; CONSOLIDATION AND UNIFICATION OF THE UNIVERSITY AND EXTRA-MURAL SIDES OF THE MEDICAL PART OF THE ROYAL INFIRMARY.

By BYROM BRAMWELL, M.D., F.R.C.P.,
Senior Ordinary Physician to the Edinburgh Royal Infirmary, &c.

HAVING been recently asked to express my views regarding the teaching of Medicine and Clinical Medicine in Edinburgh to the Committee of the Pathological Club appointed to consider the Medical Curriculum, I have placed on paper some ideas regarding systematic lectures, the teaching of clinical medicine, and medical examinations in Edinburgh which have for some time been simmering in my mind.

In order to make clear the basis of my argument and suggestions, I will first state in the form of propositions certain points which seem to me to be unquestionable:—

1. The only method of acquiring a satisfactory knowledge of medicine is bedside study. Systematic lectures, though valuable, are of infinitely less value for acquiring a real knowledge of medicine (medical diseases) than the study of disease in the wards of a hospital.

The great defect in the teaching of medicine and clinical medicine in Edinburgh at the present time seems to me to be that far too little time is available for bedside study in the wards of the hospital.

2. In consequence of the number of systematic lectures which the student is required to attend *each day*, it is impossible for him to devote as much time as, I think, he ought to devote, and as is, in fact, absolutely necessary to work in the wards and to bedside study. In the teaching of medicine and clinical medicine in Edinburgh at the present time far too much time and attention are given to theoretical, and far too little time to practical (clinical), work.

3. In consequence of the number of examinations and the way in which the examinations have recently been split up, the student finds it necessary, or thinks it necessary, to concentrate his work

and his mental energies far too much on these examinations, with the result that he does not devote sufficient time and thought to practical study at the bedside.

4. Very much more time is now necessary than was necessary a few years ago for bedside study and work in the wards of the hospital, if the student is to make himself practically familiar with disease, and with the elaborate methods of clinical research which are now employed in the examination of medical cases.

5. Although enormous developments have taken place in every department of clinical medicine, more especially in the diseases of the blood and nervous system, and although the methods of clinical observation and research are much more numerous and much more elaborate than they were a few years ago, the time allowed for the study of clinical medicine is practically the same as it was when I commenced the study of medicine 44 years ago.

6. It is becoming increasingly difficult to satisfactorily teach many of the subjects included under practical (clinical) medicine at the bedside (such as the more intricate methods of examination, the use of elaborate instruments, &c.) to large classes of students. In order to teach such subjects practically and satisfactorily, the number of students must be limited. Some plan for more equally distributing the number of students amongst the different clinical teachers and in the different wards is consequently desirable.

To sum up.—In my opinion, much more time is required for bedside study and work in the wards of the hospital; in order to get this time, the number of systematic lectures which the student has to attend *daily* should be very materially curtailed; and the examinations should be rearranged so as to make them fewer and more practical.

Rearrangement of the Curriculum.

Any rearrangement of the curriculum and of the teaching of medicine and clinical medicine, if it is to be successful and of anything more than mere temporary benefit, must look far ahead and must take a broad and comprehensive view as to the future and future developments. If the Edinburgh Medical School is not merely to keep abreast, but to keep ahead of other places as a great teaching institution, one must take into account the developments and improvements which are going on in other schools and in other countries. I, of course, fully recognise the fact that arrangements which are suited for a small school, such as the

Johns Hopkins University, with a limited number of students, cannot be satisfactorily applied in Edinburgh, where the number of students is so large; nevertheless we may learn a great deal and get many hints for improvements in Edinburgh by taking into account the arrangements for teaching in other and smaller schools. One thing which particularly strikes one in comparing Edinburgh with other places is that in other schools there are fewer systematic lectures and consequently much more time available for practical study and hospital work. In the Johns Hopkins University, for example, there are no systematic lectures on Medicine, much more elaborate instruction is given in clinical methods, and much more time is devoted to hospital and ward work.

Any rearrangement of the teaching of clinical medicine in Edinburgh should, if possible, I think, aim at *consolidating and unifying the University and the Extra-Mural sides of the medical hospital.*

I would suggest for consideration the following alterations in regard to systematic lectures, hospital work, and examinations. (The suggested alterations regarding systematic lectures and clinical teaching and hospital work to some extent hang together; the suggested alterations regarding examinations are separate and distinct, but it cannot be too forcibly stated that the nature and extent of the examination in any subject determines the nature and extent of the student's work on that subject. If the practical and clinical examinations were made more thorough and more extensive, the student would give less time to theoretical and more time to practical and clinical work.)

Suggested Alterations with Regard to Systematic Lectures.

I would suggest that the lectures on Systematic Medicine (Practice of Physic), instead of being given *daily during 2 terms* as at present, should be given *on alternate days during 3 terms.*

By this arrangement the course of lectures on Systematic Medicine would consist of 91 lectures instead of 104 lectures as at present. If the diseases of the skin were omitted from the course of lectures on Systematic Medicine, as I think should be the case, the number of lectures would be very much the same.

The dates of commencement and termination of the 3 terms of the present medical year and the number of days available for system-

atic lectures in Medicine and Surgery on alternate days, including Saturdays, are as follows:—

1*st Term.*—From Thursday, 1st October, to Wednesday, 9th December 1908, inclusive = 59 lecture days, if Saturdays are included.

2*nd Term.*—From Tuesday, 5th January, to Wednesday, 17th March 1909, inclusive = 62 lecture days, if Saturdays are included.

3*rd Term.*—From Tuesday, 4th May, to Wednesday, 14th July 1909, inclusive = 62 lecture days, if Saturdays are included.

I would further suggest that the lectures on Systematic Surgery should also be given *at the same hour* on different alternate days as the systematic lectures on Medicine.

According to this plan, there would be a lecture on Systematic Medicine, say, on Monday, Wednesday and Friday, from 9 to 10 A.M., and a lecture on Systematic Surgery, say, on Tuesday, Thursday and Saturday, from 9 to 10 A.M. (This would necessitate a systematic lecture from 9 to 10 A.M. on Saturday, but the gain to the student in other respects would be so great that the addition of a lecture on Saturday morning from 9 to 10 may be ignored.)

If the lectures on Systematic Medicine and Surgery were taken on alternate days between 9 and 10 A.M., 6 days per week, during three terms, the student would probably take two courses of lectures on both subjects, or, at all events, one complete course during the fourth and part of a second course of lectures during the fifth year of the curriculum, on both subjects.

The fee for the complete course (3 terms) on Systematic Medicine (and Systematic Surgery) should be the same as at present, namely, £4, 4s.

(Further, it would, I think, be advisable to allow the student to take the individual parts of a *second* course of lectures on Systematic Medicine from different lecturers. If this were done, a fee of £1, 11s. 6d. might be charged for each (one-third) portion of the second course.

Such an arrangement would allow any student, if he desired to do so, to take the three separate parts of his second course of lectures on Systematic Medicine from three different lecturers, who were supposed to be specially qualified in any particular department of medicine. The same arrangement might, of course, apply to a second course of lectures on Systematic Surgery and Systematic Midwifery and Gynecology.)

Suggested Division of the Departments of Medicine.—I would suggest that skin diseases be omitted from the systematic lectures on Medicine, and that the subjects included under the common term Medicine for the 3 terms might be arranged in some such way as the following:—

1*st Term.*—Blood.
Ductless glands.
Fevers.
General diseases.
2*nd Term.*—Heart.
Lungs.
Urinary diseases.
3*rd Term.*—Alimentary diseases.
Nervous diseases.

In connection with neurology, I would suggest that this subject is now so extensive and so specialised that the time has come for making a special Professorship of Neurology in the University—an arrangement which is now adopted in most of the continental and American schools of medicine.

Suggested Alteration for Clinical Teaching.

Abolition of Clinical Lectures on Medicine.—I would suggest that the clinical lectures on Medicine should be abolished. (I would further suggest that the surgeons consider whether it would not be desirable to also abolish the clinical lectures on Surgery.)

A set clinical lecture on Medicine is far too often little more than a systematic lecture, and has, in my opinion, no special advantages. A real clinical lecture—a lecture or discussion on some given subject or group of cases, *illustrated by cases*—is, without doubt, valuable, provided that the class is not too large—so large that the students cannot come in contact with the patients, and might, if the physician thought it desirable, be delivered on one day of the week, *in place of one of the ward cliniques*, to the group of students attending his wards, under the arrangement which I next propose.

Hospital Cliniques.—That a clinique should be given daily (5 days a week) in each of the medical wards of the hospital (or, of course, in the lecture-room attached to such wards).

That this clinique should be given 3 days a week, as at present—say, on Monday, Wednesday and Friday—*by the physician*, and 2 days a week—say, on Tuesday and Thursday—*by the assistant-physician.*

Such an arrangement would, I think, be far more advantageous to the student than the present plan of combined clinical lectures (to all the students attending the University and the ordinary medical wards respectively) on 2 days, and ward cliniques (by the individual clinical professors and physicians to the students attending their own wards) on 3 days weekly. It would give

five cliniques at the bedside instead of three cliniques each week. It would enable the physicians to devote themselves to higher clinical teaching than they can do at present, and would make use of the assistant-physicians as clinical teachers.

As I have already suggested, if the physician desired to do so, he might on one of his days substitute a clinical lecture for an ordinary ward clinique; this would greatly reduce the size of the clinical class in the case of clinical lectures, and would make such clinical lectures more real—more of the nature of clinical demonstrations than of systematic lectures, as they are apt to be at present.

Additional Practical Bedside Work.—I would further suggest that the students clerking in each ward should attend in that ward for 2 hours daily, from 10 to 12, during their fourth *annus medicus*, and for 1 hour daily, from 10 to 11, during their fifth *annus medicus*, under the supervision of the clinical tutor attached to the ward. This hour should be employed in studying cases, in learning medical anatomy, methods of examination (percussion, auscultation, &c.), the use of clinical instruments, and in "taking cases." The Physicians and Assistant Physicians should organise the teaching, and should from time to time be present to inspect the work and see that it is being thoroughly and satisfactorily carried out.

Such a plan would do away with the necessity for students "taking cases" in the evening; this would be of great advantage to the student, for it would give him more time for home work and for thought, and would also be of some advantage to the patients.

But the main advantage would be that it would give the student an enormous amount of time compared to what he has at present for the study of disease in the living man, and would enable him to make himself practically familiar with the more difficult methods of clinical research (the use of the ophthalmoscope, blood counting, urinary analysis, for example). Further, it would make the tutorial classes on clinical medicine much more practical than they are at present. I am told that some of the tutorial clinical classes are at present apt to be mere systematic demonstrations of clinical subjects.

Summary of Suggested Alterations for the Teaching of Systematic and Clinical Medicine.

According to this plan, then, for the rearrangement of systematic and clinical work on medicine, there would be:—

1. A systematic lecture on Medicine on Monday, Wednesday and Friday from 9 to 10 A.M.

2. Practical bedside work daily for 5 days weekly, under the daily supervision of the clinical tutor (and the occasional supervision of the physician and assistant-physician), from 10 to 12 A.M. during the fourth *annus medicus*, and from 10 to 11 during the fifth *annus medicus*.

3. Special classes on eye, ear and throat, out-patients, &c., as at present, from 11 to 12 A.M.

4. A daily ward clinique, on 5 days weekly, by the physicians or assistant-physicians, including, if the physician desires it, one clinical lecture per week in his own wards and to his own students —from 12 to 1.15 or 1.30, as at present.

For the clinical work in the hospital the fee (which is at present charged for clinical lectures, namely, £4, 4s.) should be increased to £3, 3s., or, perhaps, £4, 4s. *per term* (£9, 9s., or, perhaps, £12, 12s., for the 3 terms of the *annus medicus*).

By the arrangement I have suggested much more work would be thrown upon the clinical tutors; consequently their salaries would have to be considerably increased. The assistant-physicians should also, I think, have a portion of the fees received for clinical teaching. Hence it would be necessary to make a considerable increase in the fees for hospital teaching. A fee of £3, 3s. or £4, 4s. per term, considering the greatly increased amount of clinical instruction and hospital work which the student would have, appears to me to be a very reasonable one.

According to this plan, every student studying clinical medicine would have—

1. Two hours' work in the wards on 5 days in the week (from 10 to 12) during his fourth *annus medicus*, and one hour's work in the wards during his fifth *annus medicus*.

2. One hour or more daily clinical instruction in the wards by the physician or assistant-physicians.

Midwifery and Gynecology.—In making such an arrangement I am aware that some alteration would be required with regard to the hour for systematic lectures on Midwifery and Gynecology and for gynecological teaching in the Infirmary.

As regards clinical gynecology, it would, of course, be carried on at the same hour as clinical medicine and clinical surgery (12 to 1.15).

Modern gynecology is more a surgical than a medical subject, and, in my opinion, the time has come for separating gynecology

from clinical medicine. If this were done, arrangements would have to be made by which senior students attending clinical surgery, and working on the surgical side of the hospital, should attend the gynecological wards during their final (fifth) *annus medicus.*

If gynecology were still included with clinical medicine, some arrangement would have to be made by which senior students attending clinical medicine would also attend clinical gynecology during their final (fifth) *annus medicus.*

As regards the systematic lectures on Midwifery and Gynecology, they might be given on 3 days a week during 3 terms, say, from 2 to 3 or from 4 to 5 o'clock. By this arrangement the course of lectures on Systematic Midwifery and Gynecology (3 days a week during the 3 terms of the *annus medicus*) would consist of 91 lectures. The same arrangement as has been suggested for a second course of lectures on Systematic Medicine might be permitted for a second course of systematic lectures on Midwifery and Gynecology.

(My personal opinion is that midwifery and gynecology being a smaller subject than either medicine or surgery, 2 lectures a week during 3 terms, or 3 lectures a week during 2 terms = 61 lectures in all, would be amply sufficient.)

Suggested Plan for Making Fewer Examinations and More Practical Examinations.

I would suggest—

1. That any student who obtains a certain percentage of marks (? 50 or 60 per cent.) in the class examinations in any subject should be exempt from a *written* professional examination on that subject.

2. That the "oral" and clinical or practical parts of the examinations should be combined and made much more extensive and thorough.

The present plan of numerous examinations and separate examinations on individual subjects seems to me to be radically bad. As a matter of practical working, the student concentrates his attention for a few months on one subject and neglects everything else, devoting his time and thought to the mere passing of that examination. Such an arrangement encourages theoretical work and cramming, and, so far as I can judge, is very disastrous. My experience is, that since the new arrangement has been introduced,

many students do not attend the wards of the hospital with the same regularity and assiduity, more especially before Christmas, as they previously did, and that during the first term of the Winter Session many of them give little or no time to practical and hospital work.

If the oral and clinical or practical examinations were combined, and if the clinical and practical examinations were made much more thorough and extensive, it would, I think, be extremely beneficial to the student. This statement would apply, I think, not merely to medicine and surgery, but to every subject comprised in the medical curriculum.

Whether it is or is not considered advisable to combine the "*oral*" with the practical or clinical part of the examination in any subject, it is, I think, most important to make the practical and clinical part of the examinations much more thorough and extensive, for, as I have already stated, the extent and character of the examination guides and determines the extent and character of the student's work. If the practical and clinical examinations were made more thorough and extensive, the student would devote much more time and thought to practical and clinical work.

Further, I would suggest that the nature and extent of the examinations should be specifically laid down by syllabus. As regards the clinical examination, for example, it should be expressly stated (amongst other things) in the syllabus that the student might be called upon to examine cases with the ophthalmoscope, to make a blood count, to estimate the amount of sugar in urine, &c.

If the class examinations were allowed to exempt from the written professional examinations, arrangements would have to be made by which students who failed to get the necessary percentage in the class examinations, or students who had taken out a qualifying course of lectures elsewhere (in some other school than Edinburgh), would be allowed to present themselves for a written examination in that subject as at present.

The objections to allowing a student who had gained a certain percentage of marks (? 50 or 60 per cent.) in his class examinations in any subject to be exempt from a written professional examination in that subject, which occur to my mind, are that every lecturer would be an examiner, that the lecturers might favour their own students, and that the University would not have proper control of the examinations.

In answer to these objections I would say:—

1. That if a man is fit to be licensed to lecture on a subject,

he is fit to be licensed to examine on that subject, or, at all events, that only such men should be licensed to lecture as are qualified to examine.

2. In order that the University may maintain control over the examinations, and in order to equalise the examinations, I would suggest that the professor and lecturers on any subject (say Medicine) should form a Board of Examiners, with the Professor of Medicine as President or Chairman; that they should conjointly set the class examination papers in that subject; that the class examinations on that subject should be held on the same day and at the same hour, and (perhaps) in the same place; that the written answers should be divided amongst the different examiners; that two examiners should read each paper; that in cases of difficulty or doubt the papers should be submitted to the University Professor or a University Assessor (additional examiner appointed for the purpose) or both, who should give a final opinion on the subject.

Suggested Plan for Consolidating and Unifying the University and Extra-Mural Teaching of Clinical Medicine in the Royal Infirmary.

In making any arrangements for the teaching of clinical medicine in the Edinburgh Medical School in the future, one must, I think, take the following points into consideration:—

1. That gynecology is at the present time more a surgical than a medical subject, and that gynecological teaching should be separate from the teaching of clinical medicine.

2. That the future Professors of Pathology will not be clinicians, will not have wards, and will not be clinical teachers.

3. That in all probability the future Professors of Materia Medica and Therapeutics will be in the same position, *i.e.* will be expected to devote themselves to pharmacological work, will not be clinicians, will not have wards, and will not be clinical teachers.

It is hardly, I think, sufficiently recognised that the teaching of clinical medicine demands very special knowledge, training and experience. In the future the Professors of Pathology and Pharmacology will probably not have the necessary knowledge and experience to teach clinical medicine. If original work as well as teaching is to be done by the future Professors of Pathology and Pharmacology, they will have to devote their whole time to their own subjects, and will not have to teach clinical medicine.

If gynecology were separate from medicine, and if the Professor of Pathology and the Professor of Pharmacology were not clinical teachers, there would remain one University Professor of Clinical Medicine, the Professor of Systematic Medicine *ex officio*, and four Ordinary Physicians on the Extra-Mural side of the hospital for the male students; and it would, of course, be necessary to increase the clinical staff considerably. This might be done either (1) by appointing three Professors of Clinical Medicine and making the Ordinary Physicians University Lecturers on Clinical Medicine; or, better, I think, (2) by increasing the number of Ordinary Physicians from 4 to 7, and making all the Ordinary Physicians, during their term of office, Professors of Clinical Medicine or Lecturers on Clinical Medicine.

By either of these plans there would be 8 professors or lecturers on clinical medicine in the Royal Infirmary.

They should, I think, constitute a conjoint whole; all the fees for clinical medicine should be slumped up together in a common fee fund and divided amongst the 8 clinical professors or lecturers after deducting the necessary expenses (for clinical tutors, &c.), and such percentage of the fees as may be required by the University in order to carry out such an arrangement. (Some such similar arrangement as has recently been come to with the clinical lecturers on Surgery.)

If this arrangement were carried out, a large staff of examiners on clinical medicine would be at once provided; every clinical professor and ordinary physician in the Infirmary would be *ex officio* an examiner in the University on clinical medicine, and all the medical wards in the hospital would be available to the University for clinical examinations in medicine—this would be of great advantage.

Further, if this arrangement were effected it would be possible to distribute the students more equally in the wards, limiting the number of students in any one ward to, say, 40—one student per bed; this would be of great advantage for clinical teaching. (Students should continue to have the option of applying for clinical clerkships under any one of the individual clinical teachers—the places to be filled up in order of application; surplus numbers to be allotted by ballot or some other arrangement to the clinical teachers in whose wards there were vacancies.)

Summary of the Advantages of the Proposed Alterations.

The plan I have suggested for curtailing the number of systematic lectures *per diem*; for spreading the number of

systematic lectures on Medicine and Surgery over 3 terms; for making the hour of the systematic lectures on Medicine and Surgery the same, but on alternate days; for doing away with lectures on clinical Medicine; and for increasing the amount of time available for, and to be devoted to, practical work in the wards and to clinical teaching by the physicians and assistant-physicians would be of enormous advantage to the student, since it would give him (*a*) much more time for practical work at the bedside; (*b*) much more instruction in practical medicine; and (*c*) much more time for private study and for thought.

The consolidation and unification of the clinical teaching in the Royal Infirmary would, I think, be of great advantage to the University and Medical School as a whole, and to the Infirmary. It would do away with the opposing interests between the University and the Extra-Mural side of the Medical Hospital, which, although now much less than they have been in the past, are not, in my opinion, to the advantage either of the Infirmary or of clinical teaching. It would place at the disposal of the University a large staff of examiners and a large additional material for the clinical examinations. It would enable the students to be more equally divided amongst the different wards, and would be consequently of great advantage for clinical teaching.

The suggestion by which the assistant-physicians should take a more active and recognised part in the teaching of clinical medicine in the wards would, I think, be of great advantage to the assistant-physicians themselves, to the students, and to the future welfare of the teaching of clinical medicine in the Edinburgh School, since it would enable the assistant-physicians to train themselves as clinical teachers.

The proposed alterations with regard to the examinations would, I think, have a most beneficial influence in encouraging practical and clinical work, and would be of great advantage to the student.

Suggested Alteration of Date of Summer Session.

In connection with the curriculum, I would like to draw attention to the fact that the final Summer Session is of little use to the University students for the purpose of instruction, in consequence of the final clinical examinations being held during that session. I understand that the students are not allowed to enter the University medical wards for some time prior to the final clinical examination, lest they may become familiar with the case

on which they are to be examined. This is, I consider, a misfortune, for the medical student at the end of his career is just in the position to get most benefit from clinical instruction and study. The final Summer Session ought to be the most important of all. I pointed this out to the last University Commission, and suggested that a slight alteration in the date of commencement of the Summer Session would render this easy.

My proposal is that the Summer Session should commence, say, on 20th April and terminate on the last day of June, and that the final clinical examinations should be held during the month of July. This would enable the student to use the final Summer Session as a time of instruction, and would be a relief to professors and examiners, since they would not have to commence the examinations until the teaching was ended.

Suggested Plan by which the Systematic Lectures on Medicine could be given in the Hospital and Illustrated by Patients. (I add this as an Addendum—not an essential part of my suggested alterations.)

In connection with the suggested alterations in the teaching of systematic and clinical medicine, it would, I think, be an improvement, if it could be carried out, that the systematic lectures on Medicine should be given in the hospital and illustrated by patients: in other words, the systematic lectures should be a combination of the present systematic lectures and clinical lectures.

Such an arrangement would necessarily limit the number of lecturers on Systematic Medicine to the clinical professors and physicians attached to the Royal Infirmary; but since, according to the plan I have suggested, there would be 8 clinical professors or lecturers, an ample number of lecturers on Systematic Medicine would be provided, even supposing, as would perhaps be the case, that some of the clinical professors or lecturers did not care to lecture on Systematic Medicine.

If the systematic lectures in Medicine were given in the theatres and lecture-rooms of the Royal Infirmary, I would not suggest any distribution of the students amongst the different lecturers; there should be no limitation of the numbers of the individual classes; the students should be free to choose the lecturer whose lectures they wish to attend. But it probably would be necessary to guarantee to the University the salary of the Professor of

Practice of Physic (the Chair should be endowed by some generous donor).

So far as the arrangement of the lecture-rooms is concerned there would be no difficulty. There are at present two large clinical theatres and one satisfactory lecture-room under Ward 28; another similar lecture-room under one of the other wards (or more than one if it were thought necessary) would be easily provided at a small cost.

Consequently, 4 lecture-rooms (more if necessary) would be available. With 4 lecture-rooms, each of the 8 clinical professors and physicians would be able to give one systematic lecture three times a week, provided that Saturday were included, according to the arrangement which I have previously suggested.

Further, if all the medical wards were available for the University clinical examinations (as they would be if my suggestion as to the consolidation and unification of the Extra- and Intra-Mural sides of the medical part of the Royal Infirmary was carried out), the number of patients available for examination would be so great that no restriction as regards attendance in the medical wards prior to the final clinical examination would be necessary, though it should be arranged that the students should not be examined on the cases in the ward in which they had (during the final Summer Session) studied or acted as clinical clerks.

THE ORBITAL COMPLICATIONS OF SUPPURATION IN THE FRONTAL AND ETHMOIDAL AIR SINUSES.

By A. LOGAN TURNER, M.D.Edin., F.R.C.S.E., F.R.S.E.,
Surgeon to the Ear and Throat Department, Royal Infirmary, Edinburgh.

During recent years attention has been repeatedly drawn to the importance of recognising the nose and its accessory cavities as the etiological factor in the production of orbital and ocular phenomena. For a long time this connection was not sufficiently recognised by the writers of text-books on ophthalmology. At the present day, however, a great deal of clinical material has been accumulated, and much careful anatomical and pathological evidence has been collected to demonstrate the intimate relations existing between affection of the nasal and orbital cavities.

It is the intention of the writer to record here his own clinical experience and report his cases of inflammatory orbital affection complicating frontal and ethmoidal sinus suppuration.

The subject is not only one of surgical interest, but also of considerable gravity, as the condition may in one case entail loss of eyesight, in another terminate fatally from intra-cranial complications.

It is not the purpose of this paper to discuss all the possible oculo-orbital complications of suppurative sinus disease, but rather to deal only with those which are illustrated by the nine cases in the series. It is unnecessary to detail the anatomical relations which exist between the accessory sinuses and the orbit. The subject, however, may be simplified by drawing attention to the fact that we have an anterior and posterior group of air-cells; the former includes the antrum of Highmore, the frontal sinus and the anterior ethmoidal cells which drain into the middle meatus of the nose: these cavities occupy a contiguous relationship, varying somewhat in extent in different subjects to the anterior half of the floor, inner wall and roof of the orbital cavity. The posterior group of sinuses includes the posterior ethmoidal cells and sphenoidal sinus communicating with the superior meatus of the nose and the spheno-ethmoidal recess lying above it. These lie in relation to the posterior part of the nasal cavity and are in immediate contiguity to the posterior half of the inner orbital wall, to the sphenoidal fissure and optic foramen, and sometimes also to the floor and roof of the orbit posteriorly. In consequence

of this anatomical relationship we find that inflammatory conditions of the anterior group of sinuses may be responsible for œdema and swelling of the eyelids, orbital periostitis and subperiosteal abscess, dacryocystitis and peri-dacryocystitis. On the other hand, retrobulbar neuritis, optic atrophy and paralysis of the ocular muscles more frequently owe their origin to diseases of the posterior ethmoidal cells and sphenoidal sinus. Owing to the fact that several sinuses may be affected in the same patient, this classification is liable to some modification in certain instances, nevertheless it forms a sufficiently useful working basis. In this paper we shall deal only with the inflammatory orbital complications secondary to frontal and anterior ethmoidal sinus disease, reserving for a future communication affections of the orbital structures secondary to disease of the posterior group.

In connection with the development of orbital complications, it is interesting to study the different paths by which the infection may pass from the nasal cavities or sinuses to the orbit. Some writers have attached importance to the presence of congenital bony dehiscences in the walls intervening between the sinuses and the orbit. Zuckerkandl and others have described the existence of defects or gaps in the osseous floor of the frontal sinus and in the lamina papyracea of the ethmoid bone. In these cases the mucous membrane of the sinus and the periosteum of the orbit are in contact, thus facilitating the spread of infection from the former to the latter. This condition, however, is not common. A second and much more frequent method of infection is by caries and destruction of the contiguous bony wall of the affected sinus. The osseous wall becomes carious and may be absorbed in whole or in part. A third and not infrequent route is by way of the venous channels which pass from the sinuses to the orbit. A considerable part of the vascular return from the nasal cavity, the frontal, ethmoidal and maxillary sinuses finds its way through the adjacent orbital walls into the superior and inferior ophthalmic veins and thence to the cavernous sinus. Not only may the orbital tissues thus become infected by a thrombo-phlebitis or septic thrombosis, but intra-cranial mischief of a serious nature may develop as an extension of the orbital infection.

Lastly, the inflammation may spread from the sinuses to the orbit by way of the lymphatic vessels. Our knowledge of the anatomy of the lymphatics of this region, however, is not as yet sufficiently accurate to permit of a detailed description of their distribution. When there is no evidence of infection by

destruction of bony walls or through the veins, we may be permitted to assume that the orbital complication has arisen through the lymphatic vessels.

The patients whose histories will be detailed were nine in number, six were females and three males; their ages varied from twelve to sixty years. It is interesting to note that five of them were under twenty years of age. The right orbit was affected in two, the left orbit in seven of them. In seven cases the frontal sinus was probably the seat of the primary infection, in two the right sinus, in five the left frontal sinus. In the two remaining cases the left ethmoidal cells contained pus. In six of the series only one sinus was affected, while in one there was an associated ethmoidal and antral suppuration on the same side as the frontal sinus disease, in another the sphenoidal sinus of the same side also contained pus, and, in a third, the frontal sinus of the opposite side was suppurating.

In six of the cases the onset of the symptoms was acute, while in the remaining three the condition was a chronic one, the orbital phenomena having been observed for a period varying from three months to two years. It is interesting to note that the orbital complications in the acute cases occurred in young patients, five being under twenty and one under thirty years of age, while the chronic cases occurred in patients of a more advanced age. It will be convenient to discuss, first the acute and then the chronic cases.

A.—Six Cases of Orbital Œdema and Abscess Complicating Acute Suppuration in the Frontal and Ethmoidal Sinuses.

Case I.—*Redness and Œdema of Left Upper Eyelid; Acute Suppuration of the Left Frontal Sinus; Operation; Recovery.*

M. M'G., æt. 17, was admitted to hospital on 5th October 1905, complaining of great pain in the head coming on suddenly four days previously, with swelling of the left upper eyelid, and discharge from the left side of the nose. The swelling of the eyelid was first noticed two days previous to admission. The patient was out of employment at the time of her illness, and was not aware of having had any cold or influenzal attack. She was seen at her home previous to admission by Dr. J. L. Green, who found the temperature 101° F., pulse 116; headache was severe. On the following day the temperature had risen to 102·8° F., while the pulse was 122.

On admission her temperature was 100° F., and the pulse was 96.

She had considerable photophobia in the left eye. There was great tenderness on pressure upon the floor of the left frontal sinus, and marked œdema and redness of the left upper eyelid. The eyeball was not displaced. There had been a copious flow of yellow discharge from the left nostril on the day before admission, but previous to that she had not noticed any discharge from the nose; pus was visible in the left middle meatus: the maxillary sinuses illuminated.

Under general anæsthesia the left middle turbinated body was removed and an external incision was made along the line of the left eyebrow, and the frontal sinus opened into through its anterior wall. Immediately upon opening the cavity pus welled out under considerable tension. As the lining mucous membrane was not much altered, it was not curetted, but the communication with the nose was enlarged and a drainage tube passed down into the nasal cavity. The incision in the skin was partially closed, an iodoform gauze drain being brought out through the inner end of the incision.

After washing out the sinus for nine weeks it was evident that a satisfactory termination was not to be obtained, so that a radical operation was decided upon. Consequently the whole anterior wall of the sinus was removed along with the floor of the cavity, and thorough curetting was carried out, the cavity being packed with iodoform worsted. The case did well, and complete healing took place with very little disfigurement.

A culture taken from the pus in the sinus at the first operation showed the organism present to be the pneumococcus.

CASE II.—*Redness and Œdema of Upper and Lower Eyelids; Acute Suppuration of the Right Frontal Sinus; Operation; Recovery.*

G. G., æt. 17 years, a rubber worker, was admitted to hospital on 24th October 1905, complaining of swelling of the eyelids on the right side during the two previous days, associated with discharge and bleeding from the right side of the nose. A week before admission he had been in excellent health, but with the onset of a slight cold he had been seized with pain on the right side of the head and forehead. Two days later the swelling of the right eye commenced, so that the history of illness previous to admission was only of four days' duration.

On admission the right eye was found to be completely closed by the swollen condition of the lids, the skin covering both being red, while the soft parts had an œdematous and somewhat boggy feeling. The eyeball was not displaced. Examination of the nose showed the presence of pus in the right middle meatus, with some swelling and redness of the mucous membrane. The maxillary sinuses illuminated. The anterior end of the middle turbinated body was removed, and a

few hours later, under general anæsthesia, the right frontal sinus was opened through an eyebrow incision. A copious flow of pus followed the opening of the sinus, and after cleansing, the lining membrane of the cavity was found to be considerably thickened, but, in view of the recent nature of the case, it was not curetted. Considerable difficulty was experienced in enlarging the opening into the nose, but after this had been effected a drainage tube was introduced, the cavity was lightly packed with gauze, and the skin incision partly sutured. At the end of six weeks lavage was stopped and the patient discharged.

A fortnight later, however, it was evident that pus was re-accumulating in the sinus, as the skin incision gave way and discharge passed out on to the forehead. A second operation was performed. The cavity was full of granulations, consequently the whole of the anterior wall of the sinus was removed and a large orbital extension of the cavity was freely curetted. The naso-frontal canal was again enlarged, a drainage tube passed down to the nose, and the external incision partly sutured. After this there was a decided improvement. The drainage tube was removed in ten days, and the packing was continued until the granulations had brought about obliteration of the sinus area. Healing took place with very little disfigurement. A pure culture of the pneumococcus was obtained from the pus in the frontal sinus.

CASE III.—*Subperiosteal Orbital Abscess, Probably Secondary to Acute Suppuration in the Left Frontal Sinus; Operation on Orbital Abscess; Recovery.*

E. A., a girl æt. 12, was admitted into Ward 38 on 20th February 1908, on the recommendation of Dr. Morrison M'Intosh, who gave the following history :—Two days previously he had been called to see her on account of symptoms suggesting an attack of influenza. At this time there was an influenzal epidemic of some severity in the city. The child looked ill, her temperature was elevated, and she complained of headache. A slight fulness of the left upper eyelid was observed, and there was considerable pain on pressure upon the frontal region. There was no discharge from the nose. On the following day all her symptoms were aggravated, in consequence of which she was sent into hospital.

On admission the temperature was 102° F., pulse 108, headache severe, and great tenderness on pressure and percussion over the lower part of the forehead and the bridge of the nose, especially upon the left side. The left upper and lower eyelids were red and very much swollen, so that she was quite unable to open the eye. The left eyeball was considerably proptosed and there was slight outward displacement.

When the lids were separated and the movements of the eyeball tested no impairment was observed, but she was found to have diplopia when looking upwards and downwards and also upon extreme convergence, but not when looking to the right or left. There was no conjunctivitis or chemosis. The discs were normal. Examination of the nose revealed the presence of pus in the left middle meatus. No posterior rhinoscopy was possible. There was no discharge visible in the right nasal chamber. A diagnosis of orbital abscess, secondary to sinus suppuration, was made.

The operation was performed on the day of admission, forty-eight hours after the appearance of the swelling of the upper eyelid. An incision was made below the eyebrow extending from the inner canthus to the supra-orbital notch; the orbital periosteum was divided and raised from the inner wall and roof of the orbit as far back as the apex of the cavity. Only a few drops of pus were evacuated. The os planum and the bone forming the floor of the frontal sinus area were carefully examined and found to be healthy. The anterior and posterior ethmoidal cells were then explored by removal of portions of the os planum, but no pus was detected in the cells. The left middle turbinated bone was removed through the anterior nares and the anterior wall of the sphenoidal sinus examined; no pus was detected in that situation. The frontal sinus was not explored. The orbital wound was lightly packed with iodoform worsted and the dressings applied.

The temperature fell steadily, and was normal on the following day: the œdema of the lids and the proptosis of the eyeball became less, and the discs remained normal. On the fourth day following the operation the temperature rose to 101° F., the patient vomited and œdema of the right upper and lower eyelids was observed; there was no headache or shivering. The œdema increased and the temperature rose to 103° F., and the child looked ill and became rather drowsy. The eyes were again examined by Dr. J. V. Paterson, but nothing abnormal could be detected either in the discs or in the movements of the muscles. No proptosis or chemosis developed in the right eye, so that the possibility of the development of cavernous sinus thrombosis was dismissed. The symptoms gradually subsided, the temperature again returned to normal, the discharge from the left nasal cavity ceased and the patient made an uninterrupted recovery.

When she was examined three months later it was found that diplopia on near vision was still present. No pus was seen in the nasal cavities. On 10th December 1908 patient still had diplopia in the lower part of the fixation field, probably due to interference with the left superior oblique tendon. To correct this, Dr. Paterson suggested that glasses should be worn.

CASE IV.—*Subperiosteal Orbital Abscess, Probably Secondary to Acute Suppuration in the Left Frontal Sinus; Operation on Orbital Abscess; Recovery.*

C. R., a young woman æt. 18, was admitted into hospital under the care of Dr. George A. Gibson on 16th March 1908, with a history of having become ill with influenza three days before. On the day following the onset of the acute catarrhal symptoms she had profuse muco-purulent discharge from her left nostril. Twenty-four hours later, swelling of the left upper eyelid was observed, accompanied by great frontal pain. I examined her a few hours after admission and found both the upper and lower eyelids on the left side reddened and much swollen, completely closing the palpebral fissure. There was marked proptosis of the eyeball and chemosis of the lower part of the ocular conjunctiva. The pupils were equal and re-acted to light; the movements of the eyeball were not impaired; there was no diplopia, and the discs were normal. Frontal headache was severe and there was marked tenderness on pressure over the left frontal sinus area. Examination of the nose revealed the presence of pus on the left side, but, owing to the deflection of the nasal septum, no detailed examination could be made. As the patient was ill and in bed, transillumination of the sinuses could not be carried out. She was quite conscious and readily answered questions. There was no evidence of meningitis. Temperature was 106° F.; leucocytosis 17,000; polymorpho-nuclear cell percentage 88. A diagnosis of orbital abscess secondary to sinus infection was made and the patient was transferred to the Ear and Throat Department for surgical treatment.

An incision was made below the inner third of the supra-orbital margin and the periosteum was detached from the inner part of the orbital roof and the os planum. A few drops of pus escaped during the reflection of the periosteum. The bony walls of the orbit thus exposed appeared to be quite healthy. The ethmoidal cells were opened through the os planum, but no pus was detected. The orbital wound was lightly packed with iodoform worsted. Owing to the deflection of the septum no attempt was made to remove the left middle turbinated body.

The temperature fell to normal; the swelling of the eyelids and the proptosis gradually disappeared, and the wound in the orbit was allowed to close. The discharge from the left side of the nose ceased and the patient left hospital at the end of a month.

CASE V.—*Recurring Subperiosteal Orbital Abscess, Probably Secondary to Right Frontal Sinus Inflammation.*

J. M., æt. 25, who was seen on 4th September 1902, gave the following history:—In April 1901, while acting as house surgeon, he

was seized with acute pain above the right eye; coincident with this his temperature rose to 102° and 103° F., and the right upper eyelid became œdematous, the œdema extending on to the forehead over the region of the right frontal sinus. On the third day the swelling of the eyelid became more marked and an incision into it evacuated pus. On probing, bare bone was felt on the roof of the orbit in the region of the floor of the frontal sinus. The patient was not conscious at this time of any nasal trouble. He had always enjoyed good health. There was no history of an injury and no evidence of any specific or tubercular disease. The abscess healed, and for seven months he had no further trouble.

In November 1901 a similar but milder attack of fever and swelling occurred; pus was again evacuated from the upper eyelid and bare bone was felt with the probe. On this occasion the surgeon under whose care he was, stated that there was pus in the right nasal chamber. The abscess again healed and the patient remained well until August 1902, when a small painless swelling appeared above the right inner canthus: it was opened.

I examined him for the first time a week later, and found a small sinus discharging pus situated below the right supra-orbital margin and a short distance above the inner canthus. The probe passed somewhat upwards and backwards for a distance of one inch and a quarter (3 cm.), but one could not be certain that it entered the cavity of the frontal sinus. Some rough bone was felt during this procedure. There was no evidence on palpation of any expansion of the bony floor of the sinus and no tenderness on pressure or percussion. The right frontal sinus was quite opaque on transillumination, while the left sinus illuminated brightly. Both maxillary sinuses illuminated. There was no pus in the right middle meatus, but the middle turbinated body was large and its mucous membrane somewhat œdematous. The patient did not wish to have any further operation but took a voyage to the Canary Islands. The wound in the eyelid soon healed and some discharge which he had from time to time from the right nostril gradually lessened and finally ceased. When he reported himself in August 1903, nearly a year later, he was perfectly well and had had no further trouble. A little thickening could be detected over the floor of the right frontal sinus, which now illuminated slightly. There had been no more discharge from the nose.

The above cases are examples of œdema of the eyelids complicating acute suppuration in the frontal sinus. Œdema of the upper eyelid is usually the first sign of the extension of the inflammatory process beyond the wall of the sinus. In Cases I. and II. the orbital phenomena appeared on the second day of the illness. At the operation two days later the frontal sinus

was found to contain pus, but there was no evidence of suppuration in the orbit. Certain further points of interest must also be noted. Both patients were young, each being seventeen years of age. They came under treatment in the same month of the year, in the autumn of 1905, at a time when there was no influenzal epidemic prevailing. Both lived in the eastern part of the city. In neither case did an acute nasal coryza precede the suppuration in the sinus; in one the acute sinus symptoms were the first evidence of illness, in the other the patient had only been conscious of a "slight cold." In both cases the infection was of pneumococcal origin, a pure culture of the pneumococcus being obtained from the pus in the frontal sinus. Holmes[1] quotes some interesting observations made by Dr. Darling on the relation of inflammation of the accessory nasal sinuses to pneumococcal infection. The sinuses were examined in fifty-two autopsies: in thirty-seven death was due to pneumococcal infection, to lobar pneumonia in twenty-two, acute pericarditis in one, acute meningitis in nine, and pneumococcal septicæmia in five. In 92 per cent. of these, inflammation of one or more of the accessory sinuses was present in a marked degree, and the condition of the sinus was regarded as appreciably older than either the pulmonary or meningeal condition. Finally, we must comment upon the fact that in neither of the cases did a cure result from simply opening and draining the sinus into the nose. It was found necessary to obliterate the affected cavity at a second operation before the desired result was obtained.

Cases III., IV. and V. illustrate a further stage in the development of an acute orbital complication of sinus inflammation, namely, the formation of an abscess between the wall of the affected sinus and the periosteum covering it. In all, the symptoms were acute and the orbital phenomena appeared on the second day of the illness. In Cases III. and IV. both upper and lower eyelids on the left side were reddened and markedly swollen, completely closing the palpebral fissure. In both, the eyeball was displaced forwards, and in Case III. there was also some outward displacement of the globe and diplopia, while in Case IV. there was chemosis of the lower half of the ocular conjunctiva. In both, the discs were normal. As Case V. was not seen by me in the early days of his illness, the notes of his condition are lacking in detail. In Case III. the development of œdema of both eyelids, on the side opposite to that operated upon, and supervening upon the fourth day after the operation,

gave rise to some anxiety. As this was accompanied by a considerable rise of temperature, vomiting and some drowsiness, the possibility of cavernous sinus thrombosis was discussed. The absence, however, of any change in the optic disc, of proptosis of the eyeball or chemosis of the conjunctiva was a favourable sign: finally, the symptoms and signs gradually subsided in a few days. We have no satisfactory explanation to offer of this unusual occurrence.

Cases III. and IV., like the first two in the series, came under treatment within a month of each other, but their illness occurred during a severe epidemic of influenza, to which the acute inflammatory condition was ascribed. Unfortunately, no cultures were made either from the nasal cavities or from the orbital abscess, so that the organisms were not identified. The early and free drainage of the subperiosteal abscess in all probability saved the contents of the orbit from further damage. The ethmoidal cells were opened through their orbital wall and found to be healthy. No attempt was made to explore the frontal sinus. When the ethmoidal cells showed no pathological change, the possibility of an orbital infection direct from the nasal cavity without any sinus involvement was considered possible, and it was therefore decided to delay further interference for a few days. The great pain over the eye, with the tenderness on pressure and percussion over the frontal sinus area in all three cases, however, made a diagnosis of acute frontal sinus inflammation extremely probable. They must, therefore, be regarded as further illustrations of the spontaneous cure of acute frontal sinus suppuration, even when a serious orbital complication has supervened. It is probable, however, that a cure without operation would not have occurred in Case V. unless the patient had taken a voyage to and resided for a time in a drier and warmer climate.

CASE VI.—*Left Orbital Abscess following Acute Ethmoidal and Sphenoidal Sinus Suppuration Complicated with Blindness; Basal Meningitis and Frontal Lobe Abscess; Death.*

H. N., æt. 14, a schoolgirl, with a good family history, had always enjoyed excellent health. She had never complained of her nose. Her present illness appeared to date from a slight blow on the nose causing hæmorrhage, which she received one week before her admission to hospital on 10th November 1908. On the day following the injury she vomited on several occasions and complained of pain on the left side of the face, and on the same evening her mother noticed

Fig. 1.

Fig. 2.

Fig. 3.

slight swelling of the left upper eyelid. During the following five days the swelling of the eyelid increased, and the patient's general condition was not satisfactory. She was admitted on 10th November 1908 into the Eye Department, under the care of Dr. W. G. Sym, seven days after the commencement of her illness. Both eyelids were very much swollen and reddened, the palpebral fissure being quite occluded. There was marked proptosis, the left eyeball being at the level of the ala nasi. The conjunctiva was inflamed, and its lower ocular portion œdematous; there was a small ulcer upon the lower part of the cornea. She was unable to distinguish light. The left disc could not be examined on account of the condition of the lids. The temperature was 102° F. An incision was made through the upper eyelid, and a quantity of foul-smelling pus and gas was evacuated: a drainage tube was inserted, and the wound was frequently dressed. The condition immediately improved. Bacteriological examination of the pus from the orbit showed many and various micro-organisms; a Gram-positive bacillus of a somewhat filamentous character was most common. The inoculated media, however, gave a pure culture of staphylococcus albus.

On 15th November, the twelfth day of the illness, I saw the patient (Fig. 1) in consultation with Dr. W. G. Sym: there was a considerable amount of purulent discharge in the left middle meatus. It was impossible to examine the posterior nares: there was no tenderness in the frontal sinus area. A diagnosis of orbital abscess secondary to ethmoidal suppuration was made. Under chloroform a long incision was made under the supra-orbital margin, and the eyeball and soft tissues were displaced downwards and outwards; the pus had invaded the orbital fat and muscles, and there was considerable sloughing of the tissue: the roof of the orbit in its inner half and the internal orbital wall were freely exposed, and the lachrymal bone and the whole of the os planum were found destroyed, a large opening thus existing between the nasal and orbital cavities. The left middle turbinated bone was removed, the ethmoidal cells destroyed and free drainage established into the nose. The floor of the frontal sinus area was intact, and no attempt was made to search for a frontal sinus. The orbital cavity was lightly packed with iodoform worsted, and the superficial wound was left open.

The temperature gradually fell to normal, and the local condition improved. On 27th November, twelve days after the operation, the patient vomited on several occasions, the temperature again rose, and a well-marked facial erysipelas developed. At the end of five days this disappeared, the temperature returned to normal, and both the local and general condition improved.

On 4th December the patient became suddenly drowsy; the temperature again rose and headache was complained of. This was

accompanied by evident signs of meningitis: both Kernig's and Babinski's signs were well marked. There was gradual increasing coma, and she died on 7th December.

Post-Mortem Examination.—The bony roof of the left orbit was found to be denuded of its periosteum throughout its whole extent, with the exception of a small area at the posterior part. It presented a roughened appearance, eaten out in places, while a small, irregular, scale-like sequestrum, half an inch in length and one quarter of an inch broad, was lying detached upon the surface of the bone. In the very centre of the orbital roof a small circular perforation was visible, with a diameter measuring 3 mm. On the dural aspect of the orbital roof the bone was considerably discoloured, and in the dura mater covering it a minute perforation existed, lying immediately over the opening in the bone. Round the perforation there were localised adhesions between the surface of the brain and the dura mater. On separating these adhesions, a thin, foul-smelling, purulent fluid escaped from the under surface of the left frontal lobe, evidently coming from an abscess cavity within the brain substance. The orbital surface of the frontal lobe over an area an inch in diameter presented a dark discoloration and was soft on palpation. There was no evidence of lepto-meningitis in the anterior cerebral fossa.

Section of the left frontal lobe revealed the presence of an abscess occupying the inferior and mesial portion of the lobe. The grey matter of the cortex alone separated the abscess cavity from the orbital plate, and a fine probe passed through the small aperture in the surface of the brain already described entered the abscess. The vertical diameter of the abscess measured one inch, the tranverse three quarters of an inch, and the antero-posterior diameter one and a half inches. Its wall was well demarcated from the surrounding brain substance, and its surface was covered with necrotic tissue. An extensive basal suppurative lepto-meningitis extended over the interpeduncular space, the pons varolii and medulla spreading outwards over the lower surface of each lateral lobe of the cerebellum. There was pus in the left cavernous sinus.

Examination of the accessory nasal sinuses showed that those on the right side were healthy. The frontal, ethmoidal and sphenoidal sinuses on the left side contained pus. The frontal sinus was very small, but traces of suppuration were visible upon its lining membrane. The ethmoidal cells were largely destroyed by the operation. The left sphenoidal sinus was large, its lining membrane considerably thickened, and the cavity was filled with pus. There was no caries in the bony roof, and it was probable that the meningitis had extended directly from the wall of the cavernous sinus, and not from the sphenoidal sinus. No microscopical examination, however, was made for the purpose of determining whether the organisms had passed to

the meninges through the walls of the blood sinus or through the roof of the sphenoidal sinus. A culture from the meninges gave a mixed growth of streptococci and other organisms.

In Case VI. we have an example of a further stage in the development of a septic orbital complication, namely, the formation of an abscess in the contents of the orbit causing sloughing and disorganisation of the tissues and septic thrombosis of the veins, with extension to the cavernous sinus and a fatal termination from basal meningitis. The case illustrates, therefore, not only the severity of the orbital affection, but also the fact that these cases may terminate fatally from intra-cranial infection by way of the orbit. It was unfortunate that the patient did not present herself for treatment until seven days after the onset of the orbital affection. Delay in the treatment of such cases is dangerous, as early free drainage is essential. The onset of a severe facial erysipelas was undoubtedly an additional factor in determining the fatal termination.

B.—Three Cases of Subperiosteal Orbital Abscess Complicating Chronic Suppuration in the Frontal and Ethmoidal Sinuses.

Case VII.—*Subperiosteal Orbital Abscess Complicating Chronic Suppuration in the Left Ethmoidal Cells; Operation; Cure.*

J. P., æt. 34, was sent into hospital by Dr. Cameron of Loanhead on 14th August 1904. It was somewhat difficult to obtain a clear history in this case. The patient asserted that eight months before admission a swelling formed at the inner end of the left upper eyelid. Shortly after noticing this he had consulted Dr. Cameron, who punctured the swelling and evacuated pus. Since that time the opening had continued to discharge. The patient also gave a history of purulent discharge from his left nostril, which he thinks he first noticed coincident with the appearance of the orbital swelling. No history of injury could be obtained.

Examination revealed the presence of a small swelling at the inner end of the left upper eyelid, situated almost immediately over the inner canthus, and above the level of the tear sac. The skin in this region was discoloured and pus oozed out through a small aperture in the centre of the swelling. No expansion or thickening of the bone in the neighbourhood could be detected. A probe passed horizontally backwards for three quarters of an inch and came in contact with bare bone; it could not be passed upwards into the frontal sinus region. There was no tenderness over the frontal sinus area. There was no displacement of the eyeball and no interference with vision.

Examination of the left nasal chamber showed the presence of a large middle turbinated body occluding the middle meatus. Immediately external to the middle turbinated body a small quantity of yellow pus was visible, and a fine probe introduced at this point passed upwards and outwards for a considerable distance, its withdrawal being followed by an increased flow of the purulent discharge. Repetition of the probing was always followed by a further discharge of pus. There was no other pathological condition recognised in the nose. Illumination of the antra revealed the fact that the left antrum was opaque, while the right sinus illuminated.

The left middle turbinated body was partially removed with some difficulty. A great quantity of pus was at once evacuated. Under general anæsthesia a long, curved incision was made beneath the supra-orbital margin, and the soft tissues turned downwards. When the bone was exposed it was found that the lachrymal bone, with the exception of the anterior part, and part of the os planum had been completely destroyed, thus giving easy access to the anterior ethmoidal cells. The cells were curetted both by way of the nose and through the external incision, so that a large communication was established between the orbit and the nasal cavity. The fistulous tract in the soft parts was scraped, a large drainage tube passed from the orbit into the nose, and the external wound was completely sutured. In the course of a few weeks a cure was effected.

CASE VIII.—*Subperiosteal Orbital Abscess Complicating Chronic Suppuration in the Left Frontal Sinus; Operation; Cure.*

Mrs. S., aged 48, was admitted to Ward 38, Royal Infirmary, on 12th January 1907, recommended by Dr. George Mackay, and complaining of swelling of the left upper eyelid, with displacement of the eyeball and double vision (Fig. 2). Just below the centre of the left supra-orbital margin there was a small sinus discharging thick, greenish pus; no odour was detected: a probe passed through the opening came in contact with bare bone. The eyeball was considerably proptosed and also displaced downwards and slightly outwards. She gave a history of having suffered from epiphora for two years, and had had the tear duct frequently probed; the upper eyelid had become reddened and swollen two months before her admission and an incision had been made into it one month before; the discharge had continued since the operation. A history of nasal discharge was somewhat indefinite, and she could not describe the origin of her symptoms.

Examination of the nose showed the right side normal. In the left chamber there was slight deflection of the septum; no polypi were seen; the middle turbinated body was not hypertrophied; pus was seen in the middle meatus reappearing on posture. The left antrum

was opaque and the right antrum illuminated. Examination of the eyes revealed the existence of diplopia in all directions.

An external operation was performed through a long incision beneath the eyebrow and carried round the inner canthus; the tissues of the upper lid along with the periosteum were reflected downwards and pus evacuated. In the floor of the left frontal sinus a small hole, 6 mm. in diameter, was found, through which pus exuded; the bone round the margin of the perforation had a greenish appearance. A bent probe passed through it into the frontal sinus. As the sinus was small, the whole of the anterior wall and the floor were removed: the anterior ethmoidal cells which also contained pus were opened and an opening was made into the antrum through the alveolus. The frontal sinus was obliterated. A pure culture of streptococcus pyogenes brevis was found in the pus from the frontal sinus. The patient made a good recovery, with very little external deformity (Fig. 3).

CASE IX.—*Subperiosteal Orbital Abscess (Left) Complicating Chronic Suppuration in both Frontal Sinuses; Operation; Cure.*

H. H., æt. 60, was recommended by Dr. George Mackay, and admitted on 16th May 1907. She complained of pain over the left eye and swelling in the left upper eyelid. She had first noticed some fulness of the upper eyelid eighteen months before admission, but at that time she enjoyed good health and could give no explanation of its occurrence. The swelling remained more or less constant for a year, when she began to have shooting pains in the left eye. Coincident with this the swelling increased. Four months before her admission to hospital she had an attack of influenza, and for the first time she noticed a discharge from the *right* nostril. Neither then nor at any other time did she have discharge from the left nostril. The orbital swelling continued to increase, and at times the palpebral fissure was completely closed. There were alternate periods of increase and diminution in the size of the swelling. She did not suffer from headache and her eyesight was never interfered with: there was no epiphora. The purulent discharge from the right nostril continued.

On admission, the left upper eyelid was slightly reddened and œdematous and the palpebral fissure was narrowed. A somewhat tense semi-elastic swelling occupied the middle and inner thirds of the upper eyelid and there was a slight œdema of the skin immediately above the supra-orbital margin. Palpation produced little or no pain. No bony thickening could be detected at the periphery of the swelling. The eyeball was not displaced and the ocular movements were unaffected: there was no diplopia. When firm and prolonged pressure

was made upon the swelling it disappeared to a very considerable extent, but the patient was not conscious of any discharge of secretion into the left side of the nose. After emptying the swelling, careful palpation did not detect any aperture in the bony floor of the frontal sinus.

Examination of the left nasal chamber revealed no abnormality; there was no pus in the middle meatus; there was no polypus or œdema of the middle turbinated body. In the right nasal chamber pus was seen in the middle meatus and the mucosa covering the middle turbinated bone was œdematous. Both maxillary sinuses illuminated.

Under chloroform, on 20th May, an incision was made beneath the left supra-orbital margin, and after the periosteum on the roof of the orbit had been divided, a quantity of foul-smelling pus escaped. It was then found that the whole of the bony floor of the left frontal sinus had been absorbed and its cavity was filled with fœtid pus. A probe failed to detect any ostium frontale. Further exploration of the sinus revealed the presence of a small area of carious bone in its anterior wall and a perforation in the bony septum between the two frontal sinuses. The latter was situated about the centre of the septum and measured 5 mm. in diameter. As the sinus was shallow, the whole of its anterior wall, including the supra-orbital margin, was removed and no attempt was made to effect a communication with the left side of the nose. The right frontal sinus was exposed through a separate incision so that there might be no scar across the root of the nose. The right ostium frontale was enlarged, the œdematous mucous membrane removed, and the sinus obliterated in the same way as on the left side, by the removal of the anterior wall and floor. The wounds healed satisfactorily and there has been no recurrence of pus. The disfigurement has been rather greater than was expected from the shallow depth of the sinuses.

The pus from the abscess was examined by Dr. C. J. Lewis, who reported as follows:—Bacillus mesentericus, micrococcus catarrhalis, staphylococcus pyogenes albus, bacillus of Hoffmann and a bacillus not identified. The fœtor was due to the bacillus mesentericus.

Cases VII., VIII. and IX. are examples of a clinical type differing in several points from the six cases first described. All have a chronic history, the orbital phenomena varying in duration from eight months to two years. When investigating the etiology of cases of sinus suppuration we frequently meet with a difficulty in determining how the condition started. It is interesting to note in Case VIII. the existence of epiphora for nearly two years before any other eye symptom developed. We have had occasion

to refer to this before as an early symptom in affections of the ethmoidal and frontal sinuses.[2] In cases of protracted epiphora, where no definite cause can be ascertained in the tear sac or in the nasal duct, the surgeon should carefully examine into the condition of the anterior group of nasal sinuses.

In all three cases the orbital abscess was subperiosteal and had pointed anteriorly in the upper eyelid immediately beneath the supra-orbital margin. In the case of ethmoidal suppuration this had occurred at the inner end of the lid, and in the two frontal sinus cases the most prominent part of the orbital swelling was found, in one, at the junction of the inner and middle thirds, and in the other, in the middle third of the eyelid. The condition of the bone between the affected sinus and the orbit illustrates the pathway of infection of the latter cavity. A gradual destruction and absorption of the intervening osseous wall had taken place in all the cases, so that the pus had passed directly from the sinus into the orbit, and in Case VIII., after exposure of the floor of the frontal sinus, the pus was seen oozing through the small aperture in the bone. In the two other cases a considerably larger area of bone had been destroyed. In Case VII. the posterior part of the lachrymal bone and anterior portion of the os planum had disappeared, while in Case IX. the whole of the floor of the frontal sinus had disappeared. This latter case presented other points of special interest : a small area of carious bone also existed in the anterior wall of the left frontal sinus, and the septum between it and the right sinus was perforated. It is probable, I think, that the left sinus was first infected, and, owing to the closure of the ostium frontale, the bony walls of the sinus had become infected and gradually destroyed. The thin osseous floor suffered first, and then the septum between the sinuses gave way, thus causing infection of the right frontal sinus. The thicker anterior wall of the left sinus showed a carious area, and had, therefore, been the last to be attacked. The clinical symptoms make this explanation the probable one. The patient had never been conscious of discharge from the left nostril. Eighteen months before her operation she had noticed slight swelling of the left upper eyelid. It was not until four months before her operation that she noticed discharge from her right nostril. The explanation of the diminution in the orbital swelling by pressure was to be found in the inter-communication between the two sinuses and the patent condition of the right ostium frontale. Cases VII. and VIII. further illustrate the futility of attempting to treat such conditions

by an orbital incision only. A permanent fistula remains unless more radical measures be adopted.

Summary.—It is difficult to estimate in what percentage of cases of frontal and ethmoidal sinus suppuration inflammatory complications may supervene in the orbit. The nine cases described in this paper came under treatment during the seven years from 1902 to 1908 inclusive. During the same period of time, 130 cases of acute and chronic suppuration in the frontal and ethmoidal cells have been observed by the writer, so that in 7 per cent. of them an inflammatory orbital complication was met with. It must be observed that these statistics do not include cases in which ophthalmoscopic signs such as optic neuritis, neuro-retinitis, retinal thrombosis or phlebitis were present without external signs of orbital inflammation. These will form the subject of a future communication.

Birch-Hirschfeld[3] has given us an analysis of the records of the *Leipzig Eye Clinic*, and shown that out of 684 cases of orbital inflammation no less than 409 or 59 per cent. were due to accessory sinus inflammation, and he states further, that if an examination of the nasal sinuses had been made in every case the percentage would have been a higher one. In 129 of these the frontal sinus was the starting-point of the disease, and in eighty-three the ethmoidal cells were responsible for the orbital complication. Von Eicken[4] has recently reported thirteen cases of frontal and ethmoidal inflammation in which orbital complications supervened; although in more than one of them the inflammation was not limited to the frontal and ethmoidal cells, the orbital condition appeared to be secondary to these two sinuses. The patients came under observation during the ten years preceding the publication of his paper, but the total number of sinus cases treated during the same period is not given. Chiari and Marschik[5] have reported twenty-two cases with inflammatory orbital phenomena. In their experience the ethmoidal cells were most frequently responsible for the complication, and next in frequency the frontal sinus. The most elaborate piece of work on this subject is the recent publication of Gerber,[6] who has collected from an extensive examination of the literature several hundred cases of orbital and ocular complications secondary to frontal sinus inflammation.

If we summarise the different orbital complications met with in our series of nine cases, we find that they may be grouped under three heads: first, two cases of œdema of the upper and lower eyelids; secondly, six cases of subperiosteal orbital abscess; and,

thirdly, one case of suppuration involving the contents of the orbit. Changes in the bony walls of the orbit were observed in four cases. These consisted, in two cases of frontal sinus suppuration, in a partial and complete destruction of the floor of the sinus (Cases VIII. and IX.), and in two cases of ethmoidal suppuration, of partial and complete destruction of the lachrymal bone, and the lamina papyracea of the ethmoidal bone (Cases VI. and VII.). In Case VI. the post-mortem examination also revealed the existence of superficial exfoliation of a portion of the roof of the orbit, and a perforation of the bone. These further changes, however, were secondary to the orbital suppuration.

The eyeball was displaced forwards in four instances, associated in one with outward displacement, and in two others with outward and downward displacement. Diplopia was a symptom in two: in one there was blindness (Case VI.), but it was found impossible to ascertain the condition of the fundus. In the other eight cases the fundus was normal. Epiphora was an early symptom in Case VIII. In two there was œdema of the ocular conjunctiva, and in Case VIII. there was also a small corneal ulcer.

The bacteriology was investigated in five of the cases (I., II., VI., VIII., IX.). Reference has already been made in the description of the cases to the organisms which were found. In two of the acute frontal sinus cases a pure culture of the pneumococcus was obtained. In one of the cases of chronic frontal sinus suppuration a pure culture of the streptococcus pyogenes brevis was found, and, in another, the bacillus mesentericus, micrococcus catarrhalis and staphylococcus pyogenes albus were recognised. In the fifth and fatal case the staphylococcus pyogenes albus was obtained from the pus in the orbital abscess in pure culture, while from the pus in the basal meningitis the streptococcus pyogenes, along with various other organisms, was found. These observations are too few to admit of any generalisation being made.

Treatment.—In discussing the question of treatment we have to consider whether the onset of orbital complications should be made an indication for opening the affected frontal and ethmoidal sinuses by an external operation. Notwithstanding the fact that a number of cases have been recorded in which inflammatory œdema of the eyelids complicating an acute inflammation of these sinuses have been completely cured by endo-nasal treatment, we are of the opinion that the external operation is the wiser procedure. It is often impossible to say whether the orbital swelling is merely due to œdema, or whether pus has already formed within the cavity

of the orbit. Early evacuation of an abscess in this situation is essential, not only for the preservation of the function of the eye, but in order to prevent the risk of secondary intra-cranial complications. The danger of delayed interference is well illustrated in Case VI., where disorganisation of the orbital structures had taken place rapidly, and the septic process had spread from the orbit to the brain.

In cases of chronic sinus suppuration, in which an abscess forms in the orbit, there is in all probability caries and destruction of a part of the bony wall of the sinus contiguous with the orbit; consequently an external operation is the only possible procedure. The incision should be made immediately below the eyebrow, and great care should be taken to detach the periosteum from the inner and upper wall of the orbit without injuring it, and exposing the orbital fat. As a rule, the pus is found between the periosteum and the bone. The ethmoidal cells can then be freely opened by the removal of the lamina papyracea, and the frontal sinus can be explored by removal of the inner portion of the roof of the orbit which forms the floor of the sinus. The sinuses may then be dealt with according to the condition and size of the cavity. In the ethmoidal cells it will probably suffice to establish a large communication with the nasal cavity, while the orbital wound is lightly packed, the skin incision being left unsutured for a few days. The nasal drainage is assisted by the removal of the middle turbinated bone. In cases of chronic frontal sinus suppuration the cavity of the sinus should be obliterated by removal of its anterior and inferior walls, preferably by the method described by Killian. An operation which is confined to an orbital incision must be condemned as imperfect, as it only leads to the establishment of a fistulous opening.

In conclusion, I wish to acknowledge my indebtedness to my colleagues, Dr. George Mackay and Dr. W. G. Sym, for transferring their cases to my care, and to thank them for their courtesy in allowing me to publish them.

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RENAL DECAPSULATION IN PUERPERAL ECLAMPSIA.[1]

By Sir J. HALLIDAY CROOM, M.D.,
Professor of Midwifery, Edinburgh University.

The occurrence of eclampsia *de novo* after labour is an unexpected and disconcerting complication. It is always profoundly disappointing to see such a case succumbing in spite of the exhibition of all the known methods of treatment, and to have to stand by helpless and see the patient expire.

Such a case occurred during the last term of my service at the Maternity Hospital, and a record of it is as follows:—

J. D., aged 26. Primipara. Last menstruation in March. During pregnancy patient was absolutely well. There was no previous history of renal or any other diseases. There was no œdema anywhere. Labour set in on 16th January 1909, and the patient was admitted to the Royal Maternity Hospital, Edinburgh, at 2.45 P.M. on that day in the first stage of labour.

The patient was so nervous that vaginal examination was unsatisfactory. Abdominal palpation showed that the child was apparently in the left-occipito-anterior position. The head was not engaged in the brim.

At 4 P.M. hyoscine-hydrobromate, 100th of a grain, and morphine sulphate, one-sixth of a grain, were administered intramuscularly. The scopolamine was repeated at 6.30 P.M., the pains in the meantime continuing strong and regular. I may say, in passing, that my experience of scopolamine has been entirely satisfactory. It relieves the pain of the uterine contractions without in any way interfering with their efficiency or frequency.

Vaginal examination at this time revealed a brow presentation. After failing to reduce it to a vertex presentation, it was successfully converted into a face case, in the right-mento-posterior position. Progress was extremely slow, and at 11.30 forceps were applied and the chin brought down on to the floor of pelvis. On removal of the forceps the chin rotated naturally to the front.

Labour was completed without further incident, the third stage lasting only 20 minutes. The child was alive and vigorous. The patient's pulse was noted as being of high tension during labour. Between the time of her admission and the application of forceps the patient several times passed small quantities of urine, which were not measured.

[1] Communicated to the Edinburgh Obstetrical Society.

Puerperium.—At 7.30 A.M. on 17th January, 7½ hours after delivery, the patient had a typical eclamptic fit lasting 2½ minutes. She was at once put in hot packs, and thyroid extract (15 grs.) and potassium acetate (20 grs.) were administered. The packs were repeated two hourly, the drugs four hourly.

After the first fit the patient regained consciousness, but later became very restless. A second fit occurred at 9.30 A.M., and thereafter the patient became violently maniacal and was with difficulty held in bed. The administration of 100th of a grain of hyoscine calmed her. Fits, however, followed at 10.15, 10.20, 10.45, 11.10, 11.30, 1.30, 2.45, 3.20, 3.55, 4.30, 5.45 and 7.10. She thus had 14 fits in all within 12 hours. During the more severe fits chloroform was administered. Croton oil (3 mm.), given during the forenoon, produced a more or less continuous movement of the bowels all afternoon. Shortly after mid-day the skin began to act freely. At 2 P.M. venesection was performed, 12 ounces of blood being withdrawn and 2 pints of saline solution infused directly into the vein.

Urine was passed frequently, but it was impossible to appreciate its quantity or make any examination of its composition. A small quantity, however, was drawn off with the catheter, which on boiling became almost solid with albumen. It contained 7 grs. per ounce of urea, numerous hyaline casts, a few granular casts, but no blood, and no acetone.

The patient had again lost consciousness after the second fit, and as the afternoon passed the coma became markedly deeper in spite of the facts that the skin and bowels were acting freely and that there was quite a normal amount of urine being secreted. The face became very puffy, although the rest of the body appeared free from œdema. By 7.30 the patient was *in extremis*, that is, the pulse-rate was irregular in frequency and the tension was marked, the coma very deep and increasing, and the pupillary reflexes had ceased. Sphincteric action of the anus and bladder was gone. It was resolved to perform the operation of decapsulation of the kidneys purely as a last resource. This was accordingly done by Mr. J. W. Dowden at 9.45 P.M. The pulse at this time was of extremely high tension, the radial arteries feeling like pieces of whipcord.

The patient was placed in the usual position on an Edebohl's cushion. The left kidney was first exposed. The subcutaneous tissues and perirenal fat were very congested and bled freely. The lower pole of the kidney was easily exposed, but some

difficulty was met with in exposing the other pole and delivering the kidney. The organ was found to be enlarged and congested, and the capsule was slightly adherent. The capsule was removed as far as possible, and the kidney allowed to fall back into position. The muscles were drawn together with a few catgut sutures, and the incision closed in the ordinary way, a rubber drainage tube being left in to drain the perirenal fat.

The right kidney was then exposed and treated in an exactly similar way. The kidney was not enlarged or congested, nor was the capsule adherent in any part; indeed the whole organ appeared perfectly normal. The incision was closed as before, a drainage tube being left in on this side also.

After the operation the patient was very restless, and no change could be appreciated in the tension of the pulse.

Early in the afternoon following she became quiet and comparatively sensible, and her condition improved as the afternoon passed. The dressings on the left kidney were changed at 9 P.M., and shortly thereafter the patient fell asleep.

During the first 24 hours after the operation she passed 92 ounces of urine in addition to what was passed when the bowel was moved. Examination of a sample of the urine showed that it contained 1 per cent. or 4·375 grs. per ounce of albumen, 10 grs. per ounce of urea, and a few hyaline and granular casts.

On the following day the patient passed 65 ounces of urine. She slept occasionally for about an hour at a time. The arterial tension was somewhat reduced. The wounds were dressed, and as nothing but a little serum was coming away both the drainage tubes were removed.

Examination of the urine passed towards night showed 0·05 per cent. of albumen, 14 grs. of urea to the ounce, and no casts.

On the following day (20th January) the patient was slightly restless, but the pulse tension was lower. She passed 52 ounces of urine which contained no albumen and no casts. Urea was 14 grs. to the ounce.

21st January. The patient was rather more restless, and coughing a good deal. Occasionally there were periods of delirium. Fifty-six ounces of urine were passed.

22nd January. The patient was more quiet and sensible. Pulse tension was distinctly lower. Sixty-two ounces of urine were passed.

On the 23rd of January localised cellulitis developed just below the venesection incision. The patient was restless at night and the temperature high. The bowels moved freely.

On the 24th of January the patient was much better. Seventy-nine ounces of urine were passed containing no albumen, but urea 10 grs. to the ounce.

On the following day the patient was distinctly better, and was perfectly intelligent all day.

As the incisions over the kidneys had healed perfectly by first intention the stitches were removed.

After this the patient made uninterrupted progress to recovery.

As the record of the case shows, this patient had completed her labour with no eclamptic seizures whatever, and eclampsia had only occurred 8 hours after the labour was finished. She had been for 12 hours in a succession of fits, and was absolutely comatose, the pulse and temperature both rising, and the coma becoming more profound. What urine could be removed became solid on boiling. To all intents and purposes the case was hopeless, because she was evidently sinking in spite of the fact that the skin, kidneys and bowels were responding freely to the treatment.

I therefore determined, as a last resource, to have recourse to renal decapsulation. This operation was performed by Mr. Dowden, and the result recorded in the foregoing report. To Mr. Dowden I am indebted for his kindness and skill and for placing his services at my disposal, with the successful result which the previous report abundantly shows.

Of course the obvious criticism against the benefit of decapsulation of the kidney in this case is that her recovery was a *post hoc* and not a *propter hoc*, and that it was due not in any way whatever to the decapsulation, but entirely to the administration of the drugs and the treatment she had received before. This obviously applies to every treatment in eclampsia, but the fact that the patient, after all the remedies had been used, got rapidly and progressively worse, seems to me a sufficient reason for proceeding to the extreme measure of decapsulation. Furthermore, it must be perfectly obvious that this was not a case in which the condition had lasted a long time. There was nothing to indicate any hepatic disturbance before or during labour, and whatever may have been the proximal cause of the fits, the presence of casts in the urine pointed to some abnormal condition in the kidney. Certain it is that, in the reports which I have collected of all the cases of decapsulation which have died, there was advanced disease both of the kidneys and liver, and these are cases probably in which treatment of any kind would have been useless.

The frequency of eclampsia, occurring as it does four times in every thousand labours, one of which is usually fatal, and the cloud which surrounds its pathology, and the absolute uncertainty of its treatment, whether from an obstetrical or a medical point of view, is sufficient excuse for having recourse to any measures, however extreme they may be, with a view to its ultimate cure.

The advance of modern medicine has been mainly preventive, and this is not more evident in general medicine than it is in the case of the toxæmia of pregnancy. Whatever our views may be with regard to the toxæmia, there is no question that when it is early recognised—either by œdema or excessive vomiting, or suppression of the urine and albuminuria, or reflex symptoms—eclampsia can be averted in the large majority of cases.

In the Maternity Hospital, of course, it is seldom possible to see toxæmic cases in an early stage. They are usually brought in at the fulminating stage when eclampsia is in progress. But this point is well illustrated by the record of the Pre-maternity Home under the immediate care of Dr. Haig Ferguson. There girls under all conditions, with albuminuria and the various symptoms of toxæmia present, can be promptly and carefully treated, and I am in a position to say that not one of these cases admitted to the Maternity Hospital has ever developed any of the serious forms of toxæmia. This, in my opinion, is due entirely to the rigid care with which they are treated in the home before admission to the hospital. This is a point I should like to emphasise, for I am quite sure that the toxæmia of pregnancy is very amenable to prompt and careful treatment before actual labour sets in.

There have always been two schools of thought with regard to the treatment of eclampsia before and during labour—the school that believes in general medical treatment for either eliminating the poison or else diminishing its immediate effects, and the other school which advocates immediate delivery. Personally, while believing that all methods of eliminating the poison ought to be adopted, I adhere to that school which advocates immediate emptying of the uterus, and I feel justified in advocating by preference, although perhaps not always, the method of delivery either by rapid dilatation where that is possible, or, where the cervix does not lend itself readily to rapid dilatation, by vaginal or abdominal Cæsarean section.

But what is to be said of eclampsia which continues after delivery is over, or which occurs *de novo* after delivery? After the child is delivered, and after all medical resources have failed,

and where the woman lies almost in the article of death, what surgical methods have we still at our disposal? What is the condition of the kidney? The kidneys are particularly affected. Let me quote the words of W. B. Jones of Rochester, in an interesting paper on the subject:—"They become congested to the extent of interfering with their function, and later, of total disorganisation. Irritated by the toxins in the urine, the parenchyma begins to swell; the finer vessels are compressed, and cannot carry away the blood brought into the organ; congestion and irritation are increased by mechanical obstruction, and the condition passes on to degeneration of the parenchyma, which is practically necrosis, but not quite so rapid as it would be if the circulation were entirely blocked as by a ligature round the main vessels. This is not a theory devised to fit the symptoms or even the post-mortem findings."

The methods are either lumbar puncture or the operation of decapsulation of the kidney. This latter was first proposed by Edebohls of New York. It had been previously suggested by Harrison as a surgical treatment for chronic nephritis, in which he advocated the incision of the kidneys in cases where there was evidence of increasing tension of the organs. This has been discussed from a medical point of view in an excellent paper by Dr. Francis Boyd, and its value in ordinary nephritis, whether chronic or acute, I would not venture to discuss.

Though Sippel first suggested that eclampsia might be due to the displacement of the ureter causing a marked venous stasis of the kidney, and proposed stripping the capsule off the kidney in cases of hyperæmia and uræmia, it was Edebohls who, arriving at a similar conclusion, first carried the idea into practice in eclampsia.

Since first practised by Edebohls, it has been performed for eclampsia, so far as I know, 32 times, and of these 32 cases 17 recovered. To these I must add my own, which makes 33 cases in all, with 18 recoveries. In each of these recorded cases all forms of treatment had been tried and exhausted. The patient was rapidly growing worse. The convulsions had been very numerous and coma very deep, and the patient was moribund.

Every one of the cases where autopsy was performed showed rapid degeneration of the parenchyma of the kidney, such as is found in violent poisoning, complete strangulation of the blood-supply, or acute infection.

One must, of course, always admit that even the worst cases

sometimes recover, but in the cases recorded, including my own, which is the 33rd, the patients were as near dissolution as might be.

The theory of the action of this operation is perfectly reasonable. Whatever the remote cause of eclampsia may be, the condition is mainly one of toxæmia with insufficient elimination. This is shown by its mode of onset, by the prodroma when present, and the degeneration of the parenchyma of the liver and kidneys, as well as by the improvement brought about by eliminative treatment of any kind when the condition has not advanced too far. As in my own case, so in others. Every one who recovered after the operation very soon began to pass largely increased amounts of urine and of urinary solids and urea.

Pinard reports on a paper by Chambrelent and Pousson that they have gone further than Edebohls, and performed nephrotomy, or incision into the kidney parenchyma, as well as decapsulation. They quote a successful case in which fits and coma had recurred after *accouchement forcé* performed for eclampsia. By relieving tension, as by iridectomy in glaucoma, the nephrotomy, by local blood-letting, allows the escape of toxins. Pinard has three successful cases in which there was anuria. Sippel warns against the general adoption of the operation until its exact indications are better known.

In a paper by Ernest Runge in 1908, it is pointed out that Edebohls obtained an increase in the amount of urine secreted in a hundred cases of chronic nephritis by decapsulation. In two of his eclampsia cases, while the emptying of the uterus did not have the desired effect, the fits ceased after decapsulation.

Polano first carried out this operation in Germany. The fits set in after delivery, and in 10 days post-partum he carried out the operation. The patient died, but he was of opinion that the operation had exerted a beneficial influence on the diuresis and on the general condition. Gauss reported a successful case. Asch, Weisner, Kleinertz, Franck and Falgowski also were able to record successful cases. Others, however, did not have such good fortune, and Essen-Moller, Haim, and Kleinertz lost patients after the operation. Baumm attempted this method in three cases, but failed to prevent a fatal termination.

Under what circumstances, then, ought this operation to be undertaken? Clearly, it is not to be thought of in cases before labour sets in or where labour is in progress, because, however our views may be divided with regard to obstetric interference in

eclampsia, I think it is beyond doubt that in most cases the fits cease after labour is completed. Therefore, it is essentially an operation post-partum, because it must be perfectly clear that where it is attempted before labour is over, one of the most efficient methods of dealing with eclampsia will have been omitted. Furthermore, every eclamptic ought to have the benefit of all the recognised methods of treatment, irreconcilable as some of them are, before recourse is had to this operation.

The emunctories, skin, kidneys and bowels ought all to have been freely stimulated, and any of the other methods employed, such as saline injections, blood-letting, morphia and thyroid as the necessity of the individual case may have suggested. This method ought only to be adopted, so far, at all events, as we at present know, as a last resource.

Now, in the case I have recorded, exactly such was the state of matters. The skin had acted freely, there was continuous action of the bowels, the very kidneys themselves were acting fairly well, and yet the coma was becoming increasingly profound, the temperature was rising, and the patient was, as I have said in an earlier part of this paper, in the very article of death.

It is quite true, perfectly true, that many extreme cases recover sometimes after being comatose for days, yet the experience of most of us who have worked in the hospitals for twenty years, as I have done, must be that the vast majority of them reach that stage only to die.

Decapsulation of the kidney, performed by competent hands, is not a dangerous operation, and when one has reached the very last possibility as to treatment, I thought, and still think, it quite justifiable to perform this operation. Of course the ideal case in which to perform it would be under the conditions which I have just mentioned, *plus* complete anuria. At the same time, the result of the operation justified its being undertaken in this case, because it must be observed that although the right kidney was but little affected the left kidney was encompassed by a firm capsule.

In conclusion, it must be obvious that the indication for decapsulation is not, as Pinard avers, only total anuria, but any case such as the one I have recorded, in which the kidney is obviously the organ most seriously implicated, and in which the toxæmic changes have not advanced too far. I repeat that the *rationale* of the operation appears to be that the stripping or incision of the capsule permits the restoration of the circulation

through the kidney, and thus causes a diuresis, and so aids the elimination of the toxin. The passing of a normal quantity of urine of ordinary density is not enough; far more under such circumstances is required, and this is just what decapsulation achieves. I am firmly convinced, however, that this is an operation to be undertaken only post-partum.

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RENAL DECAPSULATION IN PUERPERAL CASES.[1]

By R. C. BUIST, M.A., M.D.,
Gynæcologist, Dundee Royal Infirmary.

In 1899 Edebohls, reviewing his series of nephropexies, had six cases of chronic nephritis. In the first five of these improvement of the nephritis had been found incidentally to follow the nephropexy, and in the sixth, in January 1898, the operation had been done with a view to possible improvement of the nephritis. In this case, a month after the operation, albumen and casts had permanently disappeared from the urine. Two years later Edebohls had definitely arrived at the idea of renal decapsulation for chronic nephritis. He published a series of papers dealing with the theme, and in 1904 collected and extended these in his book on the *Surgical Treatment of Bright's Disease.* In this he was able to give the details of 72 cases. One case of puerperal eclampsia is included in the series, and another is reported separately. Forty-one of the patients are recorded as surviving at the time of writing, and of these 3 were not improved, 20 improved, 17 cured, and 3 not known. The interval after operation ranged from eleven and a half years to eight months. Various explanations are offered of the mode of action of the method, but the evidence is at present hardly sufficient to decide between them. A few puerperal cases have been published, but the number is still small, and it may be of interest to read short notes of 3 cases in which I have employed the operation.

Mrs. B. (34), primipara, was seen by me with Dr. Neave for severe vomiting, which had come on a week before, in the eighth month of pregnancy. Morning sickness had occurred early and had persisted, but the patient had been able for her work as a shopkeeper till a week ago, since which she had retained no food. Her face was red, and her eyes bright, but she looked so ill and the vomiting had so far resisted treatment that she was sent into hospital. She was given peptonised milk enema, 5 ounces every three hours. During the night vomiting was frequent, and in the course of the second night contained "coffee ground" material. There was absolute anuria after admission, and the pulse-rate advanced from 86 to 120, and light delirium supervened and

[1] Read to the Forfarshire Medical Association.

increased. She had tetanoid movements in the hands, and some rigidity of the arms. I made an external version, dilated the os by hand easily, and delivered a macerated fœtus. The placenta was not removed, but 2 pints of saline solution were introduced into a vein. At my request Mr. Price then decapsulated the kidneys. The capsule stripped easily, and was then sutured to the muscles. The skin incisions were closed. Light chloroform anæsthesia was induced during the operations. The patient collapsed during the application of the bandage, and was temporarily recovered, but died seven hours later, anuria persisting. The flushed face was maintained throughout, and she presented some of the general features of polycythæmia, but no blood-count was made, and as permission for an autopsy was refused, the nature of the condition could not be further investigated.

J. L. (20), primipara, was admitted to hospital at term, having been 12 hours in labour, and having had seven fits, which had begun about three hours before admission. She was delivered by forceps under chloroform anæsthesia and had 40 ounces of saline solution injected under the breasts. In the next nine hours she had three fits, and was given a hot pack and morphia $\frac{1}{4}$ gr. in addition to the routine saline enemata. In the 24 hours following delivery she had had twelve fits, and at my request Mr. Greig decapsulated the kidneys, removing the capsule and closing the wounds. She had one more fit six hours after the operation. In the next 24 hours the amount of urine increased slightly, and the patient became conscious. On the third day there was a little oozing on the left side, for which the wound was dressed. On the fourth day the patient was restless and had delusions, and had incontinence of urine. She had sedatives, hyoscine proving the most useful. The delusional condition lasted ten days, and was followed by marked hysteria, in which she occasionally developed a cataleptic tendency, maintaining for a short period a cruciform attitude with opisthotonus. She was able to go home in five weeks with the urine normal. She was evidently a person of weak mind and had suffered from fits up to the period of puberty. The eclampsia had been preceded by swelling of the legs and face for a fortnight, and by abdominal pain for four days.

Mrs. M. (27), was admitted to a medical ward in the sixth month of her fifth pregnancy. She had had excessive vomiting, and had for two weeks had no movement of the bowel. The urine had been tested some time previously, and showed no albumen. She had had severe headache. On admission her intelligence was

found much impaired. She muttered to herself, and answered questions incoherently. P. 120, Tp. 98, R. 22. Urine s.g. 1022, albumen, urea 3 per cent., hyaline and granular casts. It took four days to get the bowel opened, and at night she was restless and needed scopolamine. Three days later incontinence of urine and fæces set in and consciousness was much impaired. I saw her, and after consultation drew off the liquor amnii by catheter. Two days later the os had just begun to dilate, and as the general condition was deteriorating she was removed to the maternity wards and delivered, after incising the cervix. The child lived three days. The day after delivery the mother showed no improvement. She was restless, semi-conscious, and had incontinence of urine and fæces. Professor MacEwan decapsulated both kidneys and removed the capsules. The wounds were drained, and healed normally. The next days showed distinct quickening of consciousness, with a somewhat unruly reaction to outside impressions, which gradually subsided until she was quite normal, and exhibited fair intelligence and a sense of humour somewhat handicapped by defective articulation, probably of dental origin. She was two weeks on milk only, and at the end of four weeks was able to go home, albumen having been entirely absent from the urine for several days previously. Owing to the incontinence which existed at first, it was impossible to make a record of the urine in the early stages after the operation. Later there was efficient diuresis.

In presenting these three cases it is evident that they were not chosen to favour the operation, but the operation was chosen as a last resort because they were desperate. It does not usually fall to the lot of the obstetrician to deal with chronic cases which are going downhill, and, as a rule, his patients improve on the milk only regimen, and he is enabled to avoid the grave breakdown. On the other hand, obstetric cases sometimes come under treatment when serious breakdown has occurred, and then a considerable number die. Judgment is liable to err, but each of these three cases seemed to me certain to die, in spite of more or less routine treatment by saline injection and the rest. Two of them recovered, and it seemed to me that the operation marked the turning-point of the illness, and I am disposed to credit Edebohl's conclusion as to the service which the operation is capable of rendering in chronic cases. The operation itself is extremely easy and brief, and the wounds heal easily. Of Edebohl's 72 cases 58 were known to have had renal disease for periods varying from three years to three months before operation. Seven cases died in the

period immediately following the operation, three from uræmia, three from acute dilatation of the heart, one from pneumonia. By the time of report 22 more had died, the interval after operation being on the average thirteen months, and varying from two weeks to eight years. As already stated, 43 were alive from eleven and a half years to seven months after the operation, and of these only three were not improved. The evidence seems enough to establish for the operation a claim on the consideration of the physician in cases where kidney disease is not improving, though only by considerable extension of our present experience can a final judgment as to its usefulness be arrived at.

THE PHYSIOLOGICAL BASIS FOR DECAPSULATION OF THE KIDNEY IN ECLAMPTIC ANURIA.[1]

By H. OLIPHANT NICHOLSON, M.D., F.R.C.P.,
Assistant-Physician to the Royal Maternity and Simpson Memorial Hospital, Edinburgh.

It has frequently been said that just as the multiplicity of theories of eclampsia shows that we know nothing about it, so the many methods of treatment in use prove our inability to manage the condition. Even to-day, in spite of all the recent experiments and observations that have been made on the subject, we must admit the general truth of this statement. But the inquiry is being narrowed down. A more correct interpretation has been put upon many of the clinical symptoms of the eclamptic state, and, as a result, treatment has become more rational and less empirical.

In this paper I wish to deal entirely with one clinical symptom which is invariably present at some period or other in eclampsia—the complete or nearly complete suppression of urine. The arrest of the secretion of urine, associated as it must be with the retention in the blood and tissues of all the toxic substances which are intended to be excreted, is the one essential thing to understand; a correct interpretation of its production carries with it the means of successfully treating practically every case of eclampsia that has not been allowed to advance too far. If we can re-establish renal activity early enough, then, in the vast majority of cases, the recovery of the patient is assured.

Therefore the whole question of rational treatment in eclampsia turns upon elucidating the cause of the arrest in the secretion of urine. Can we, in the present state of our knowledge, form a correct, or fairly correct conception of the altered conditions in the kidney which arise in the eclamptic state, and result in more or less complete anuria? I am of opinion that we are now in a position to do so. Let me refer to the important points which seem to throw light on this matter, and which are to be noted in the clinical study of eclamptic cases.

Firstly, there is the *increase in arterial pressure*, and there can be no question whatever that this is invariably present. Now, during the whole course of normal pregnancy there is little or no rise in the arterial pressure, therefore when a definite and lasting rise occurs it is noteworthy. Investigation into the cause of this

[1] Communicated to the Edinburgh Obstetrical Society.

raised blood-pressure in eclampsia reveals the very evident fact that the arteries available for palpation are markedly contracted. The obvious physical condition present is one where not only the larger but also the smaller arteries are firmly constricted. Thus the commencement of the eclamptic state is characterised by general arterial spasm, which gives rise to heightened blood-pressure. At this early stage the secretion of urine may not be diminished.

Secondly, as the condition progresses the blood-pressure rises still higher, and this very important and striking clinical fact is to be noted, namely, that in spite of the raised blood-pressure the quantity of urine secreted steadily diminishes. Such a phenomenon arrests one's attention, because the general statement in books on physiology is that the secretion of urine rises and falls with rising and falling of the blood-pressure. In eclampsia the higher the blood-pressure the lower the urinary secretion; when the blood-pressure is at its highest the secretion of urine is at its lowest—is perhaps abolished altogether.

If we can correctly interpret this condition of matters we have an important clue to the successful treatment of eclampsia. Three clinical features are definitely present—(1) Profound contraction of the arteries and arterioles; (2) enormously high blood-pressure; (3) urinary secretion more or less suppressed. At this stage it is, of course, probable that convulsions or coma will be present; and the urine contains albumin.

From our knowledge of the physiology of the secretion of urine it is evident that some profound alteration has taken place in the circulation of blood through the kidneys, and this alteration has suspended the function of secretion. The point I wish to bring out is that this sudden renal incompetency may be explained entirely by a disturbance of the circulation in the healthy kidney; there may be none of the pathological changes which indicate a previous nephritis. One is forced to this conclusion when one recalls the numerous instances in which, as soon as the convulsions subside and recovery occurs, all the renal symptoms disappear, and there is rapid and complete restoration to health.

Two questions, then, have to be considered—(1) What is the nature of this alteration in the renal circulation which results in the suppression of the flow of urine? and (2) How can one restore the circulation in the kidney to its normal condition, and thus re-establish the secretion of urine?

The mechanism by which the condition of complete anuria in

eclampsia is brought about by gradually increasing contraction of the arteries is somewhat complicated, and some physiological points must be referred to. In the first place, one must dismiss from one's mind the idea that the secretion of urine is a simple consequence of the pressure of blood in the renal vessels, and that the higher the pressure the greater the secretion of urine. That this is not the case is shown by the effect of compressing the renal vein, which, while not lowering the pressure, arrests the secretion of urine. The point to lay hold of is this—that the secretion of urine increases and diminishes with increased and diminished *flow of blood* through the kidney; more or less urine is passed into the renal pelvis according as more or less blood comes under the influence of the secreting cells.

This physiological fact is a most important one, for what happens to the kidney as a result of the eclamptic condition is that the flow of blood through its vessels is entirely stopped. Blood cannot get into the kidney and blood cannot get out. Naturally enough complete anuria results.

I am satisfied that this is what actually occurs, and I am greatly strengthened in my view from a consideration of the effects of certain vaso-constrictor drugs upon the renal circulation, which have been carefully worked out by eminent physiologists and pharmacologists. In eclampsia we have to deal with a toxæmia, and the toxin, wherever it comes from, produces profound and extensive arterial spasm. So much is generally conceded; the nature and source of the substance is still unknown. That it is a body possessing the properties of the internal secretion of the adrenal glands is also generally admitted; perhaps, as I have suggested, it is adrenalin itself, acting, for certain reasons, on the arterioles to an extreme degree.[1] Or it may be that the interesting chemical substance obtained from the human placenta by Dixon and Taylor,[2] which, curiously enough, possesses all the properties of adrenalin, is the constrictor of the vessels that we are searching for. There is still the mystery why it should act to a dangerous extent in certain cases only, throwing the kidneys out of action by cutting off their blood-supply. At all events, the circulatory features which develop in the eclamptic state clearly point to the presence in the blood-stream of some powerful vaso-constricting

[1] "Eclampsia and the Thyroid Gland," *Scott. Med. and Surg. Journ.*, June 1901.

[2] *Proceedings of the Royal Society of Medicine*, Obstet. and Gynæcolog. Section, November 1907.

substance; it remains now to indicate the manner in which it brings about the alteration in the renal circulation resulting in more or less complete anuria.

Under normal conditions there is a definite relationship between the general blood-pressure and the secretion of urine. When a vaso-constricting substance acts upon the arteries and arterioles to a moderate degree, more blood flows through the vessels of the kidney and the pressure in the glomeruli rises. This results in an increased secretion of urine. The important point to emphasise here is that the amount of urine secreted is determined entirely by the height of the blood-pressure in the *glomeruli;* the height of the blood-pressure anywhere else counts for nothing.

Now suppose that the vaso-constricting substance acts more powerfully, so that its contracting action, besides affecting the arteries of the body generally, affects the smaller branches of the renal artery as well. What happens? The time comes when these vessels become so much contracted as to arrest the flow of blood through the kidney. Then the pressure in the renal glomeruli naturally falls to a very low level indeed, and the secretion of urine ceases entirely. And yet the brachial or radial blood-pressure, as estimated by the sphygmometer, is found to be enormously high. This is no fancy picture, because it can be produced by such a drug as digitalis, both in the human subject and experimentally in animals. The secretion of urine, under such circumstances, is completely stopped, exactly as it would be if one put a ligature around the renal artery.

Now, when the flow of arterial blood through the kidney is cut off in this manner by a sudden or gradual tightening up of the smaller renal vessels, a quite unlooked-for, yet highly important thing, happens—*the renal veins become greatly congested*, and the pressure in them is enormously raised. Theoretically one would expect to find the kidney pale and anæmic, with its arterial blood-supply cut off, but Brown-Séquard[1] showed that the organ is deeply congested, the reason for this being that the veins had lost their contractile power, and the blood had consequently flowed backwards into them from the large venous trunks. The tiny veins that issue from the glomeruli get more and more distended, press more and more upon the arterial capillaries, lessen the flow of blood through them, and in this way still further diminish the secretion of urine. This unexpected secondary effect following

[1] Quoted by Lauder Brunton, "Arsenic in Albuminuria," *Practitioner*, June 1877.

upon the cutting off of the arterial blood-supply to the kidney is a very unfortunate thing for the eclamptic patient, and makes it much more difficult for any medical treatment to restart the flow of blood through the kidney. Thus you will readily understand why one expects to find a large amount of albumin in the urine, and find it only over a short period of time. Any obstruction to the return of venous blood from the kidneys is one of the causes most certain to produce albuminuria.

This is my conception of eclamptic anuria as it occurs in women who have never previously suffered from nephritis. With such a profound disturbance of the circulation inside the kidney, following upon what amounts to a temporary closure of the renal artery, the secreting epithelium of the tubules must suffer considerable injury. Hence the post-mortem appearances of the kidney may be suggestive of an ordinary parenchymatous nephritis. But in cases of eclampsia, in its most typical form, the ablest pathologists have found the sole change to consist in a degeneration of the tubular epithelium. Such a change in the epithelial cells may result entirely from the altered circulatory conditions in the kidney which I have described. The post-mortem appearances found in the kidneys, and also in the liver, lungs and spleen, in eclampsia may, in my view, be ascribed to the intense venous congestion of these organs, which results from the cutting off of their blood-supply. The histological changes produced by the injection of adrenalin on some of the glandular organs of the rabbit, which have been described by W. B. Drummond, are very similar to the changes found in these organs in eclampsia.[1]

This same alteration in the renal circulation may, of course, occur when the kidney happens to be affected by a chronic parenchymatous or interstitial nephritis. Then there may be certain anomalies in the renal symptoms. The secretion of urine may not be so scanty, for instance, if the kidneys are affected by a chronic interstitial nephritis. But the urine will then probably be of very low specific gravity; the solid constituents will not be excreted. Some years ago I directed attention to this state of matters in a case of eclampsia.[2]

The next question is how to bring the renal circulation back to something like the normal, so as to get the blood-pressure raised in the glomeruli, and thus get urine secreted again. The state of

[1] *Journ. Physiol.*, Cambridge and London, 1904, vol. xxxi., No. 2.
[2] *Scott. Med. and Surg. Journ.*, March 1903, p. 213.

matters is this—The larger arteries and arterioles of the body are contracted, and the general blood-pressure is very high; the smaller renal vessels are tightly contracted—perhaps particularly so—thus leading to extremely low pressure in the glomeruli; the venous pressure at the periphery of the kidney is greatly increased, and consequently there is considerable compression on the artery and urinary tubule of each individual glomerulus by the efferent vein. The flow of blood through the kidney is stopped.

Now, under such conditions, it seems to me that there are only two ways in which it is possible to get blood to flow through the kidney again and thus re-establish the secretion of urine.

One way is *to dilate the renal arteries*, and thus induce blood to flow into the kidney while the general blood-pressure remains much the same. There are certain drugs—particularly the nitrites—that have the power of dilating vessels, and which appear to act specially upon those of the kidney, thus securing for it a larger amount of blood. In this way the glomeruli are refilled with blood, and urine begins to be secreted again. Drugs of this class are sometimes used in the treatment of eclamptic anuria, but most of the remedies commonly used—morphia, thyroid extract, chloral, and veratrum viride, all in very large doses—act by producing very complete relaxation of *all* the blood-vessels in the body, including those of the kidney. In the medical treatment of eclampsia *vaso-dilatation* is the principle involved in every successful method. Everyone must have observed another striking clinical feature in eclampsia—that it is when the blood-pressure falls and the radial arteries enlarge that a satisfactory diuresis becomes established.

The other way to start the flow of blood through the kidney in eclamptic anuria is obviously *to lower the pressure of blood in the renal veins*. This is really the thing most urgently called for, but it is difficult to do by means of drugs, and in any case it takes time. Very free purgation from the intestine by means of croton oil, elaterium, or compound jalap powder, will lessen the venous congestion in the kidney; so also will dry cupping over the loins. Bleeding freely from a large venous trunk will act in the same way. But if anuria is complete, and the patient is gravely ill, and we have failed to get blood into the kidney by way of the renal artery, then there is no doubt that the quickest and most useful thing to do is to expose the kidney and draw off blood directly from the venous plexuses of the organ. This somewhat heroic treatment is founded upon a physiological basis if the circulatory condition in

the kidney is as I have described it. When blood is tapped off from the smaller renal veins in this way, the arterial capillaries in the glomeruli will fill up with blood, and the normal circulation through the organ will stand a good chance of being restored.

We owe this suggestion of treating eclamptic anuria by a surgical method to Dr. George M. Edebohls of New York. In 1904 he published a remarkable work entitled *The Surgical Treatment of Bright's Disease.* He strongly advocated decapsulation of the kidney for the treatment of chronic nephritis, and he operated on two cases of puerperal eclampsia in this manner to his satisfaction. In one of these cases—the second—the results were very striking. Edebohls insists that this case proves how renal decapsulation can arrest the progress of uræmia and puerperal convulsions *in the undelivered woman;* he believes that this operation may be considered as an alternative to the induction of premature labour in cases of threatened eclampsia.

In both the cases of eclampsia operated on by Dr. Edebohls entire renal decapsulation was performed, and in the second case, which was a typical one for such treatment, the kidneys were markedly increased in volume. But the capsule was loose, and could even be pinched into folds. Therefore the explanation that the immediate good effects of decapsulation are due to relief of the renal tension would not seem to be justified. But others, among them Reginald Harrison, have shown that incision, or even puncture, of the kidney is a beneficial proceeding in some cases of albuminuria with suppression of urine. It is almost certain that relief of the venous congestion of the organ explains the improvement.

In cases of eclamptic anuria occurring in women who have not previously suffered from nephritis, and who in all probability have healthy kidneys, I do not think that complete decapsulation of the organ is necessary. The *direct* abstraction of blood by cutting freely into the organ at its lower border, should be sufficient to restore the renal circulation to its normal condition, and thus re-establish the secretion of urine. This would be a much simpler and less dangerous surgical procedure than complete decapsulation. At all events, looking to the altered conditions of the renal circulation, which underlie the abolition of the secreting function of the organ, this method of *directly* relieving the engorgement of the venous plexuses, and thus removing the main cause of the anuria, seems to afford a reasonable prospect of dealing with even those grave cases of eclampsia which do not respond to other methods of treatment.

CLINICAL RECORDS.

REMOVAL OF SEVEN NAILS FROM THE ASCENDING COLON.

By J. HOGARTH PRINGLE, F.R.C.S.,
Surgeon, Royal Infirmary, Glasgow.

A LAD, aged 20 years, was sent to the Glasgow Royal Infirmary late at night on 26th November 1908 with a note, from a medical man who had seen him for the first time the same evening, saying that the patient had swallowed some nails, and was "now very ill."

It appeared that eight days previous to this he had swallowed some 1-inch nails. He said he swallowed seventeen. Some of his fellow-workmen had made believe to have swallowed some nails, and dared him to do so also. He worked up to the evening of the 25th November, and said nothing to his relatives about what he had done, but he began to have abdominal pain on the 23rd. The boy was decidedly weak-minded, and could not give much information. His bowels appear to have been loose all the time. The pain has been getting worse, and on the day of admission had been pretty severe.

On admission his temperature was 100°—pulse 112. The abdomen distended and tender all over. The liver dulness did not reach the costal margin by 2 cm.; leucocytes, 21,800.

X-ray examination showed seven or eight nails in the cæcal region, and none elsewhere. He could not say whether he had passed any nails from the bowel or not.

Operation on morning of 27th incising over the cæcum and lower part of ascending colon. The nails were lying chiefly in the hepatic flexure, and none could be found in any other region. Seven nails were removed after bringing them down to the colon opposite the wound, and the colon sutured up. The parietal wound was only partly closed, as I was not satisfied with the state of the peritoneum. He vomited during the afternoon, and during the night vomiting was excessive.

28th November 1908.—No flatus was passing. Temperature, 101°-102°; pulse, 120.

30th November 1908.—The bowel has not acted in response to all treatment, and the abdomen is greatly distended, and vomit-

ing is frequent; so I brought up the lowest portion of the ileum to the wound, fixed it there and drained it. Flatus passed freely after this, and large quantities of fluid fæces the same day, and his general condition improved greatly after this; flatus and fluid fæces passing freely from the tube in the bowel.

On 7*th December* 1908 some dulness was found at the base of the right lung, with moist râles, and vomiting began again. He died on 9th December 1908.

Post-mortem.—There was a general fibrinous peritonitis. In the region of the hepatic flexure there was a small collection of pus between the bowel and the liver. The cæcum was deeply discoloured, and the tissues around the opening into the colon were in an early stage of necrosis. It was not possible to discover any evidence of laceration of the mucous membrane of the bowel, and no foreign body was found. The kidneys were congested, the liver was slightly cirrhotic and bile-stained. Spleen large and soft. The heart and left lung natural. The right lung showed three patches of fibrinous pleurisy between the upper and middle lobes—two on the under surface of the upper lobe and one on the upper surface of the middle lobe. One of the two patches on the under surface of the upper lobe was placed over an embolic abscess of about the size of a marble. The remainder of the lung was healthy.

The above case well illustrates the danger of sharp-pointed bodies in the alimentary canal. Where such objects pass the pylorus they may traverse the whole intestinal canal, and only cause trouble, perhaps, when they reach the anal canal. But there is some tendency for foreign bodies to catch at the flexures of the colon, and in this patient I think there is little doubt that the nails caused some abrasion or minute wound of the colon through which infection passed to the peritoneum. I think now that it was an error on my part not to have made a more complete examination of the hepatic flexure at the first operation. It is possible that it might have led to a more careful shutting off of the colon from the general peritoneal cavity than was actually effected, but at the time I thought the local condition found round the cæcum plus my wound into the colon was the chief danger, and I only tried to shut off that part of the cavity.

THE FATE OF FOREIGN BODIES SWALLOWED INTENTIONALLY.

By ALEXIS THOMSON, F.R.C.S.,
Assistant-Surgeon, Royal Infirmary.

THE exhibitions given in public by men who call themselves "human ostriches" are apt to convey the impression that the alimentary organs of man are able to deal successfully with any foreign body that can be made to pass the gullet. It is to be feared that the knowledge of what is possible in this direction may engender an attitude of over-confidence in the resisting powers of the digestive tube and excite persons of ill-balanced mind to indulge in quixotic performances attended with no little danger to life. In the following case, danger to life was brought about by the impaction of foreign bodies in the duodenum, necessitating an operation for their removal.

The patient was a young man, aged 21, who was admitted to the Infirmary on the 12th August 1908, on the recommendation of Dr. Henry Hay. He was a vanman by occupation, and had been undergoing a term of imprisonment for embezzlement, and while in prison he became depressed and acquired a not unreasonable but somewhat exaggerated dislike to his surroundings.

About eleven days before admission he began to swallow various articles of metal and portions of china which were accessible to him. He says that he did not realise what he was doing, and denies any intention of committing suicide. He swallowed altogether twenty-eight iron rods or staples, these being six centimetres in length and slightly over half a centimetre in thickness; they had a smooth surface and rounded ends. He also swallowed six sharp-pointed tacks, thirty-two pieces of china, these being the fragments of a broken mug, and nineteen metal clasps intended for binding boards together, these being flattened pieces of iron about one inch square. When collected afterwards the bodies weighed over two pounds. Quite recently he complained of pains in the abdomen, and, on reporting the facts to the officials of the prison, he was brought to the hospital.

He proved to be a docile and easily-managed patient; he was quite frank about what he had done, and appeared anxious to be made well. There had been no sickness. He complained of pain in the throat and left side of the neck, and there was tenderness along the pharynx and gullet, doubtless due to the swallowing

of so large a number of irregularly shaped, rigid bodies. He also complained of vague abdominal pains or spasms, but the chief seat of suffering was in the upper part of the abdomen around the umbilicus and extending from this to the right costal margin. On bimanual palpation it was easy to recognise in this area an ill-defined mass or tumour, which yielded a distinct grating sensation, due to the movement of the foreign bodies on one another. A radiogram showed that this mass corresponded to the second and third parts of the duodenum, greatly distended by an accumulation of foreign bodies in the lumen; metallic bodies were also seen scattered throughout the abdomen, chiefly in the position of the ascending and descending portions of the colon.

He was put on a milk diet, with abundant pudding and porridge, and an enema was given every morning. The motions contained an excess of mucus and were at first black in colour from the presence of altered blood. Every day, or every other day, foreign bodies were passed, sometimes two or three, sometimes as many as half a dozen, so that in the course of a fortnight he passed eight staples, three tacks, sixteen pieces of metal and over twenty pieces of china. Most of the bodies were sufficiently large and possessed of sufficiently sharp edges to have caused a good deal of pain in their passage through the anus of a normal person, but his sensibility appeared to be blunted, for he made no complaint.

Radiograms were taken at intervals of every few days; isolated metallic foreign bodies could be traced in successive photographs as they passed through the colon and were got rid of. The dense shadow already referred to measured roughly five inches in the horizontal direction and between three and four inches in the vertical direction; it lay in front of the bodies of the second and third lumbar vertebræ, and overlapped these for a couple of inches on the right side and about an inch on the left. This shadow corresponded to the grating mass which was felt through the anterior abdominal wall, and apparently represented a conglomeration of metallic bodies in the second and third parts of the duodenum. This shadow was always present in successive skiagrams, but in the course of about a week it began to diminish in size, some of the bodies, chiefly those in the third part of the duodenum, having been passed on into the jejunum. Twelve days after his admission the shadow measured three and a half by three inches, and covered only the right half of the bodies of the second and third lumbar vertebræ (Fig. 1). It was obvious that not only had a

considerable number of the bodies, which had originally lodged in the duodenum, been got rid of, but that those which remained had become more closely packed together and had become confined to the vertical or second portion of the duodenum, which had become considerably enlarged owing to their presence. *Pari passu* with these changes in the radiograms, the mass as palpated from the abdomen became much less distinct, it lay at a greater depth from the surface and grating could no longer be elicited.

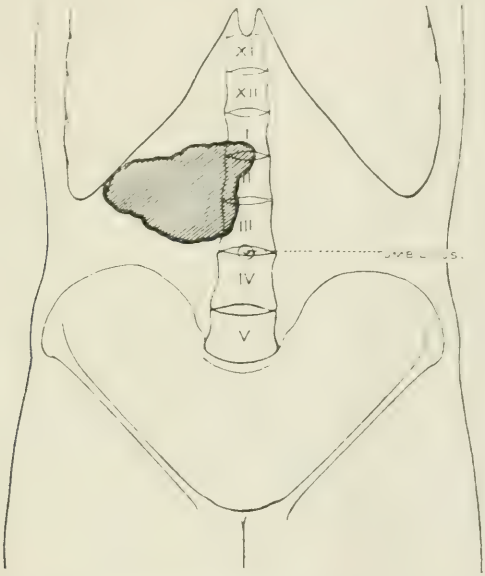

Fig. 1.—Reduced tracing of radiogram of metallic bodies impacted in second part of duodenum.

As it seemed unlikely if not impossible that he would be able to get rid of the impacted mass, it was decided to operate.

At the operation on the 7th September 1908 he took the chloroform badly, and a good deal of trouble was experienced in keeping him continuously under its influence. The abdomen was opened in the middle line, and the stomach at once presented; it was abnormally large, its walls thickened, and its vessels greatly increased in size, as if it had been subjected to considerable strain in attempting to drive on the mass impacted in the duodenum. The pyloric portion of the stomach was brought out at the wound, and, having been put on the stretch by two traction sutures, one above and one below, it was opened by a vertical

incision; the bleeding edges of the mucous membrane were seized with mouse-tooth forceps, and the gastric mucus mopped up with gauze. A finger was then passed through the pyloric ring into the duodenum and felt the portions of metal; those in the first part were somewhat loosely arranged, while at the lowest end of the second part there was a series of staples closely packed against one another, with their long axes at right angles to the long axis of the gut. Those in the first portion of the duodenum were removed with a pair of dressing forceps which had to be inserted for a distance of six inches; those impacted at the lowest part of the second portion had to be displaced upwards by means of the fingers of the left hand and thus brought within reach of the dressing forceps. The mucous membrane of the duodenum bled a good deal during these manipulations, and it was with difficulty that the bile-stained mucus was prevented from escaping into the peritoneal cavity. There were removed at the operation fifteen staples and two metal clasps. The wound in the stomach was closed with two tiers of sutures and the abdomen closed without drainage.

He made a rapid recovery; a week after the operation he passed five staples and a few days later three tacks and a metal clasp; these had probably been impacted in the duodenum, and had been liberated by the manipulations at the operation.

Dr. Henry Hay, Surgeon to the Prison, reported on the 1st November 1908 that since he left the hospital he had shown a desire to resume his craze for swallowing foreign bodies and he was caught in the act of trying to swallow a piece of his shirt. Soon after he was certified insane and was admitted to the Royal Asylum, Morningside; he has been there under observation for three months, and has given no trouble of any kind.

Surgical literature abounds with records of cases in which foreign bodies have been swallowed, and a great deal of information has been accumulated as to the results which may follow thereupon. Since my attention has been directed to the subject I have found that there are a number of questions on which further information is required.

Perforation of the digestive tube and obstruction of its lumen are the dangers most to be feared. Perforation is the better known and the more frequent of these; it may take place within a short time of the ingestion of the body or its occurrence may be considerably delayed, as, for example, when a body, not necessarily sharp pointed, becomes impacted across the lumen

Fig. 2.—Photograph of foreign bodies about one-half actual size. (The long rod at top of plate, measuring 7 inches in length, was inserted by the photographer.)

and causes ulceration, which, commencing in the mucous membrane, may, with the assistance afforded by micro-organisms and digestive juices, extend through the other coats. Perforation may occur at any part of the alimentary tract, but is obviously most likely to occur in those parts where the walls are approximated by the peristaltic action of the muscular coat. For this reason, as well as for the comparative narrowness of its lumen, the gullet is of all parts the most likely to be perforated by sharp-pointed bones of fish or other animals. The stomach, on the other hand, is comparatively immune, partly no doubt because of its saccular shape and in part to the manner in which the foreign body is made to circulate with the food in the process of gastric digestion. It is even very rare for perforation to occur at the pylorus; probably because the direction of the current of contents through the pylorus and first part of the duodenum is the same as in the pyloric antrum. If the body, however, becomes wedged athwart the orifice, it may become impacted in the gastric wall, as in a well-known case recorded by Mr. Walter Spencer, *British Medical Journal*, 17th November 1900. A fish-bone, two and a half inches in length and the size of a stout needle, became impacted in the pyloric ring and the pointed end of the bone was driven through the stomach into the anterior abominal wall, from which it was successfully removed by operation.

Perforation of the intestine, in proportion to the number of foreign bodies which pass along it, is a comparatively rare occurrence; in the majority of the recorded cases the perforation took place after the formation of adhesions and resulted in an abdominal abscess which opened on the surface or gave rise to a fistulous communication between the intestine and some other viscus, such as the urinary bladder.

The lodgment of a foreign body in the lumen of the digestive tube is surprisingly rare considering the nature and number of bodies which have been swallowed. Here, again, the gullet ranks first as that part of the tube which is most likely to be the seat of lodgment and in which obstruction of the lumen is most likely to result. There would appear to exist an interesting difference in the likelihood of impaction in the gullet according to whether the body is swallowed accidentally or intentionally; in the former case there ensues a condition of choking and spasm of the muscular coat, which greatly favours the impaction of bodies which otherwise might be expected to pass without difficulty into the stomach. On the other hand, when foreign bodies are swallowed intention-

ally the act of deglutition would appear to be carried out at its acme of perfection, for even such large objects as razors, forks and knives have been passed through the gullet with ease; I have not been able to find the record of any case in which a foreign body intentionally swallowed became impacted in the œsophagus. It goes without saying that once a body has entered the stomach which is too large to pass through the pyloric ring, such as knives or forks, it remains there until it is removed by operation or until it perforates the gastric wall, as in the well-known "fork-case" recorded by Monsieur Labbé of Paris.

For anatomical reasons the junction of the second and third parts of the duodenum, known as the inferior duodenal flexure, would appear to be a likely site for the lodgment of foreign bodies. This part of the gut resembles the trap of a water-closet, and if, as is sometimes the case, there is no horizontal portion of the duodenum, the descending portion makes a V with the ascending portion. It is probable also that the sphincter muscle described by Ochsner may play a part in the lodgment of bodies in the second part of the duodenum. We would venture to suggest that these factors are concerned in the lodgment of small metallic bodies which it would be otherwise difficult to explain as occurring in this part of the alimentary tract. When such metallic bodies as nails or metal rods are swallowed in large number, they have been known to accumulate in the second part of the duodenum and by their weight drag the duodenum downwards, exaggerating the angling at the flexure and making their onward passage still more difficult. There is a specimen in the Royal College of Surgeons' Museum at Lincoln's Inn Fields which shows the stomach from a woman, aged 41, who had suffered from hæmatemesis at 17 years of age, and several times later; ultimately incessant vomiting led to death. It was then found that the pylorus lay behind the pubes and the duodenum distended by a mass of pins weighing a pound, the lumen of the gut being completely obstructed.

Once a foreign body has escaped from the duodenum it is little likely to cause perforation or to lodge in the small intestine, the slow vermicular contraction of which favours its onward progress. In the large intestine the chances of lodgment or of perforation are much greater, and either of these is more likely to occur at one of the flexures or in the ampulla of the rectum.

MEETINGS OF SOCIETIES.

Forfarshire Medical Association.

An ordinary meeting of the Society was held on Friday, 2nd April, at 4 p.m., in the School of Medicine, Dundee, Dr. Pirie, Vice-President, in the chair.

Professor MacEwan showed two cases after laminectomy for injury to the spine. The first case was that of a man who, while loading a lorry, was knocked down by a bale of jute. When seen a few days after the accident he complained of pain and weakness in the legs. There was distinct paresis of the muscles of the right leg, and to a lesser extent of the left leg; with partial anæsthesia chiefly in the anterior part of both legs, and to a slight degree in the gluteal region. An X-ray examination of the spine showed a flattening and slight distortion over the 4th lumbar vertebra. Under chloroform this was cut down upon. The lamina of the vertebra was found to be fractured on the right side. The depressed piece of bone was removed, and the pressure symptoms gradually disappeared.

The second case was that of a man who fell 15 feet from a wall on to his back. When seen he had complete paralysis of both lower limbs, with loss of sensation up to the level of the 12th dorsal nerve, and also retention of urine. There was distinct crepitus over the 9th and 10th dorsal spines. Under chloroform an incision was made over this region, when it was found that the spinous processes of the 9th and 10th dorsal vertebræ were fractured, the ligaments ruptured, and there was a fracture of the lamina of the 10th vertebra, involving the articular process. The posterior part of the arch of the 10th vertebra was removed, and as there was a partial dislocation, the arch of the 11th vertebra was also removed and the spine straightened. The coverings of the cord were unaffected. He ultimately made a good recovery.

Professor MacEwan also showed the specimen of a stomach with a perforation in the anterior wall, and a second perforation at the œsophageal end.

The radiogram of a calculus in the right ureter, and the calculus after removal, were exhibited—as were gall-stones, 580 in number, removed from the gall-bladder of a woman with a history of biliary colic of 7 years' duration. The largest stone, pyriform in shape, was found impacted in the cystic duct.

Dr. Mackie-Whyte showed a series of radiograms of the large intestine from a case of life-long constipation in a woman aged 45, which had resisted all forms of medicinal treatment. Two ounces of carbonate of bismuth were given with porridge in the morning. Four hours after the first photo was taken. This showed a shadow in the lower part of the abdomen towards the right side. Eleven hours after

the shadow corresponded to the ascending colon and the hepatic flexure. Twenty-nine hours after the shadow dipped down into the pelvis, then up towards the splenic flexure. Fifty-two hours after the descending colon and the sigmoid flexure came into view. The sacculated appearance of the large intestine was well shown throughout the whole length. A diagnosis was thus made of a marked increase in the bend at the hepatic and splenic flexures, with a prolapse of the transverse colon. This was undoubtedly the cause of the constipation. During the examinations the passage of the food was demonstrated to be very rapid in the small and extremely slow in the large intestines.

Dr. M'Gillivray showed two men who had suffered respectively from pneumococcal and diplo-bacillary hypopyon keratitis. He read notes on the "Differential Diagnosis and Treatment of the Disease," and Dr. Pirie read a paper on "A Year's Work with X-Ray in Diagnosis in the Dundee Royal Infirmary." These papers will appear in the *Journal*.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By J. S. FOWLER, M.D.,
Physician to the Royal Hospital for Sick Children.

Epidemic Anterior Poliomyelitis and Allied Affections (Heine-Medin's Disease).

In 1905 Norway and Sweden were visited by a widespread epidemic of anterior poliomyelitis, and in 1907 a less severe epidemic occurred in New York and its vicinity. The former was merely the culminating episode in a series of epidemics which began in Norway and Sweden in 1893. These outbreaks have established the infectious nature of the disease, and they have afforded opportunities, hitherto unrivalled, for the study of its pathology and clinical features: they have thrown no light on its etiology, nor have they advanced the treatment. We now know that the lesions of anterior poliomyelitis extend far beyond the anterior cornua, and it is common ground among all who have had a chance of studying the subject that epidemic anterior poliomyelitis deviates markedly from the classical type of sporadic infantile paralysis. For this reason Wickmann and others have proposed to bestow on the whole group of cases to be described the name "Heine-Medinsche Krankheit," Heine having been the first, in 1840, to describe the classical form, and Medin of Stockholm having elaborated the clinical picture by including the atypical cases which occur in seasons of epidemic.

That epidemics are not very rare is shown by the fact that Holt and Bartlett have collected records of 35, excluding that which occurred in America in 1907. These have been widely scattered throughout the globe, Norway being especially afflicted (5 in 10 years). Most of the epidemics were small—less than 20 cases in 23 of them, and over 100 in only 4. These were, the Australian epidemic of 1904, with 108 cases; Vermont, U.S.A., with 132; Norway, 1905, with 719; and 1906, with 334. The seasonal occurrence of epidemics is strikingly uniform. In 33 instances they occurred during July, August and September, and in every instance ended with October. In Australia the epidemic occurred during the corresponding months of March and April. No evidence exists that a community which has passed through an epidemic is liable to have more than the average amount of anterior poliomyelitis in the following year, as has been observed in the case of cerebro-spinal fever. Epidemics occur as often in the country as in towns, and amid

good hygienic surroundings. Acute anterior poliomyelitis is not associated with any other disease. The mortality is fairly high in comparison with that of the sporadic form—201 deaths in 1659 cases, or 12·1 per cent. While most of the patients are under 4 years, a larger proportion of older children and adults are attacked than at other times. The disease is infectious, and probably communicable.

Before speaking further of the New York observations, Medin's work must be summarised. His views are given by Wickmann in a valuable monograph based on the Norwegian and Swedish epidemics of 1899, 1905 and 1906; in the last of these alone 1031 cases occurred, and full data of all are extant. Following Medin, Wickmann divides cases of epidemic anterior poliomyelitis into the following groups:—(1) Poliomyelitic form; (2) acute ascending or descending paralysis; (3) bulbar or pontine form; (4) encephalitic form; (5) ataxic form; (6) polyneuritic form; (7) meningitic form; (8) abortive form.

The initial symptoms usually set in acutely; sometimes they are preceded by indefinite ill-health for a few days. More important, however, are the cases in which there is first a mild attack, followed in the course of a few days by a severe one. It seems that such "relapses" are especially likely to occur in patients whose first attacks have been of a trivial nature, and who, feeling comparatively well, have resumed work too early. The principal early symptoms are fever, somnolence, headache, and stiffness of the neck and back from meningeal irritation, and tenderness over the spine. Hyperæsthesia is extremely common, and is sometimes aggravated by moving the back or limbs. Other symptoms are less constant than these: the main point established is that from the very onset of the disease the signs point chiefly to widely-spread implication of the meninges, and, as will be seen, this corresponds with the facts elicited on post-mortem examination.

1. *Spinal* (*Poliomyelitic*) *Form.*—The features of this are too well known to require description. The only special points which merits remark is the comparative frequency with which the muscles of the trunk are paralysed. Paralysis of the abdominal muscles was not uncommon; either the whole abdomen, or one segment, leading to a hernial protrusion of the viscera, may be affected. Similarly, the muscles of respiration, particularly the diaphragm, may be affected. When the lesion is in the cervical and upper dorsal region the oculo-pupillary fibres may be implicated.

2. *Ascending or Descending* (*Landry's*) *Paralysis.*—This symptom-complex is almost characteristic of cases of fatal acute poliomyelitis. It accounted for 45 out of 159 fatalities. Heretofore it has always been customary to describe acute ascending paralysis in the adult as "Landry's paralysis;" in the child, as "anterior poliomyelitis." According to Medin, the two are identical.

3. *Bulbar or Pontine Form.*—After the usual premonitory symptoms paralysis of one or more cranial nerves sets in. Most commonly the seventh is affected; next, or in association with it, the hypoglossal. Of the ocular nerves the third and sixth are most liable. These paralyses may be completely or partially recovered from. Fundal changes, and affections of the fifth nerve, are rare. Lesions of the lower cranial nerves, causing difficulty in swallowing and laryngeal palsy, may occur. A lesion in the medulla may also show itself by (in addition to a cranial nerve palsy) disturbances of respiration—*e.g.* Cheyne-Stokes' rhythm—by interference with the pyramidal tracts, or by ataxia.

4. *Cerebral Encephalitic Form.*—This corresponds with the polio-encephalitis of Strümpell. It is characterised by spastic hemiplegia or monoplegia, perhaps with impairment of speech. It is very rare.

5. *Ataxic Form.*—In this an ataxic gait is the leading symptom; there is no marked wasting, but there may be paresis of groups of muscles. The deep reflexes are often exaggerated. It seems that there is considerable doubt whether the ataxia is due to a central lesion (*cf.* 3, *supra*) or to polyneuritis. The exaggeration of the reflexes favours the former supposition.

6. *Polyneuritis.*—The cases which are suggestive of the lesion being situated in the peripheral nerves are—(1) Those which recover rapidly and completely; (2) those in which there are local signs of lesion of a single nerve; (3) acute ataxia. During epidemics many cases are observed, occupying all grades between the abortive type and complete palsy, which nevertheless make a rapid and absolutely complete recovery. In some of these the pain at the onset is very severe. No well-marked cases of peripheral sensory paralysis have, however, been met with.

7. *Meningeal Form.*—The initial symptoms are well marked; tonic and clonic spasms occur; there is usually residual paralysis. The resemblance between these and cerebro-spinal meningitis is obviously great. Wickmann gives a table of distinctions, from which the following is abridged:—

Heine-Medin's Disease.	*Epidemic Meningitis.*
1. Residual paralysis is usually of limbs; permanent.	Usually of eye muscles; transitory.
2. Fever of short duration.	Prolonged.
3. Herpes rare.	Common.
4. Rashes absent.	Frequent.
5. No sequelæ.	Deafness common.
6. No hydrocephalic stage.	Hydrocephalus common.
7. Puncture fluid clear.	Usually turbid.
8. Meningococci absent.	Present.
9. Lymphocyte infiltration of pia.	Leucocyte infiltration.

8. *Abortive Form.*—Fever, headache, stiffness of the neck are the leading symptoms of abortive cases, which may run their course as "meningism," "influenza," or "gastro-intestinal catarrh."

Swedish Epidemic of 1905.—So far as could be ascertained, the incubation period was, in most cases, from 1 to 4 days. The disease was found to spread by direct contact, and through the intermediary of healthy persons. The epidemic travelled along railways and main roads. Of the 1025 cases, 41 occurred between January and June, 887 between July and October, and 97 in November and December. The disease tended to occur in groups, beginning with one or two isolated cases in a district. It was not very rare for more than one member of a household to be attacked; in 627 houses there was only 1 case, in 95 houses 2 cases, and in 61 houses from 3 to 6 cases. Probably the number of single cases was in reality less than stated, because abortive attacks of the disease are liable to escape detection. In one series of cases there was reason to suspect that infection was disseminated by milk.

Prognosis.—The death-rate, 12·2 per cent., shows that the prognosis is not always favourable. The only fact which seems to affect the mortality is the age of the patient; the older he is the more likely is he to die. Up to the age of 11, the mortality is about 10 per cent.; from 12 to 14 years, 28 per cent.; from 27 to 29 years, 33 per cent. The majority of deaths occur on the fourth day; if the patient survive for a week he generally recovers.

From a paper by Berg on the New York epidemic of 1907, it would seem that the main features of the disease as observed in America agree with what has been found in Sweden. There is the same liability of older children and adults to contract the disease, the same aberration from the classical type—both in the direction of complete recovery in some cases, and the development of acute ascending palsy in others. The lesions in epidemic anterior poliomyelitis are, briefly, as follows:—Diffuse infiltrative inflammatory changes along the vessels, chiefly in the anterior cornua, but involving to a less extent the whole grey matter, and extending longitudinally through the cord, and even spreading to the white matter. There is degeneration of the ganglion cells of the cord. The pia of the cord, medulla, pons, base of brain, and even hemispheres is inflamed. In many cases there is also inflammation of the brain substance, especially of the grey matter—cranial nerve nuclei and even cortex. The change in the pia mater is regarded as the primary lesion, and even in the mild cases there is a generalised inflammation of the cord, brain, and cerebral and spinal meninges. The opinion formed by Berg from observing the American epidemic differs from that of Medin. Berg looks on sporadic anterior poliomyelitis as radically different from the epidemic disease, for which he prefers the name meningomyelo-encephalitis. The two differ in their pathological

appearances, in their mortality, in their symptoms, in the ages of the patients, and, probably, in the further important respect—sporadic anterior poliomyelitis is not an infectious disease, while meningo-myelo-encephalitis probably is.

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SURGERY.

By W. J. STUART, F.R.C.S.,
Assistant-Surgeon, Royal Infirmary, Edinburgh; Assistant-Surgeon, Deaconess Hospital, Edinburgh.

Hirschsprung's Disease.

Neither the etiology nor the best treatment of Hirschsprung's disease or "Megacolon" is satisfactorily established, hence the interest of two recent surveys of the published cases by Zesas (*Centralbl. f. d. Grenzgeb. d. Med. u. Chir.*, 8th and 22nd March), and by Schmidt (*Beitr. z. klin. Chir.*, Band lxi., Heft 3). In this disease there is enormous enlargement of the colon, with scanty and infrequent motions, and Hirschsprung himself states that the most characteristic feature is that the condition is unattended by any mechanical narrowing or obstruction. Many different conditions, causing similar clinical features, have, however, been described under the title of Hirschsprung's disease, and must be considered.

Various theories as to the *etiology* have been propounded:—

1. Congenital dilatation and hypertrophy of the whole or part of the colon—in fact, giantism of the colon.

2. Congenital dilatation, with secondary hypertrophy.

3. Congenital lengthening of the colon and its mesentery, with or without secondary kinking, volvulus or valve-formation.

4. Congenital mechanical obstruction, including narrowing of part of the colon or spastic contraction of the colon or of the sphincter ani.

5. Hypoplasia of the muscular coat of the colon.

6. Hypoplasia of the elastic elements.

7. Faulty innervation of the muscular coat, causing deficient tonicity.

8. Primary inflammatory changes in the mucous membrane.

The appearance at operation or sectio is typical. The large intestine seems to fill the whole abdomen, is distended with fæces and gas, and

may, even in a young child, be of the calibre of one's arm or even much larger. There is generally hypertrophy of the wall of the large intestine, affecting chiefly the circular muscle fibres, but there are often also areas of thinning. The part of the bowel most involved is from the descending colon onwards. The enormous distension usually causes some kinking at the region of the pelvic brim. The mucous membrane is congested, pigmented, and often ulcerated, and the ulcers may lead to perforation.

The *clinical features* are infrequency, sometimes almost complete absence, of spontaneous evacuations of the bowel, these occurring perhaps only at intervals of weeks, though flatus may be freely passed; great difficulty in artificially producing evacuation; enormous abdominal distension; generally visible peristalsis, appearing spontaneously or excited by massage, this peristalsis being either painless or being attended by colicky pains; and lowered vitality, with toxæmia. If the bowel can be well cleared out, great, even if only temporary improvement is obtained. In five days about twenty-five pounds of fæces have been removed from a boy of eight years of age. The symptoms generally appear within the early days, months or years after birth, but exceptional cases are encountered in which there is comparatively little trouble till adult life. The disease is much commoner among males than among females.

The *prognosis* is grave. Nutrition is poor, the diaphragm is interfered with, and heart and lungs are compressed. Death may be due to such causes as acute or chronic obstruction, acute colitis, cachexia, or intercurrent disease. Cases are, however, recorded in which, after an obstructive attack had been successfully overcome, the patient enjoyed comparatively good health for eleven to thirteen years before succumbing to a second attack.

The relative value of various methods of *treatment* can be studied from the reported cases, which, however, are not numerous. Non-operative or operative measures may be adopted. The essential in the former is to empty the bowel of fæces and gas. Purgatives are worse than useless. The efficiency of massage and of the application of electricity is not established. High, large enemata give the best results, accompanied by massage, and necessarily preceded in many cases by manual emptying of the rectum. The following operative procedures have been employed:—

1. *Exploratory Laparotomy.*—In some cases the abdomen was closed at once; in others the contents of the bowel were gently pressed down to the anus.

2. *Puncture* of the bowel, either through the abdominal wall, which is an absolutely indefensible method, or after laparotomy. This practically permits little but gas to escape, and is only a temporary measure.

3. *Colotomy.*—The bowel is incised, emptied and closed. The results have been bad.

4. *Colostomy.*—As a temporary measure in bad cases this is valuable. It is not proved that it is followed by any permanent improvement in the condition of the bowel.

5. *Colopexy.*—The results are not satisfactory, though in some cases it is successful.

6. *Coloplication*, either by producing longitudinal folds by means of stitches, or by excision of elliptical pieces of bowel wall, the mucous membrane being left. This procedure has only been adopted in a few cases and with one success.

7. *Entero-anastomosis.*—Though not a radical measure, inasmuch as it only diminishes the loading with fæces of the dilated part of the bowel, it theoretically should be successful where there is a valvular obstruction. Unfortunately in these cases the obstruction is often so low in the narrow pelvis that the technical difficulties are great. The operative mortality has been considerable.

8. *Resection of the Affected Bowel.*—Only a loop is in some cases resected, in other cases a varying amount from the descending colon downwards. In one case the excision was carried down to the anus, and the transverse colon pulled down and fixed there. A lateral anastomosis is, where possible, the safest mode of junction. The mortality is surprisingly low, apparently under 25 per cent., at least among the recorded cases, and the therapeutic results are excellent. A one-stage operation is best, but should the patient's condition be bad, a two-stage resection may be performed, or a colostomy, followed at a later date by a resection. In the latter case the opening is probably best made in the cæcum or ascending colon.

Some writers have asserted that surgical measures are unjustifiable, except possibly a rapid exploratory laparotomy to establish the diagnosis. Statistics do not support this view. The published examples of the disease are few, but in a collected series of fifty-nine cases treated medically and another of fifty-eight treated surgically (excluding exploratory laparotomy and simple puncture) the results are as follows:—

	Non-operative.	Operative.
Death . . .	66·1 per cent.	41·4 per cent.
No change . .	6·8 ,,	6·9 ,,
Improvement . .	15·2 ,,	8·6 ,,
Cured . . .	11·9 ,,	43·1 ,,

These figures speak in favour of surgical interference, especially as some of the cases were brought to the surgeon too late to afford a fair chance of success. Resection seems to be the best operation, preceded by a preliminary colostomy where the patient's condition does not admit of immediate resection.

Hæmophilia.

This is another disease or constitutional anomaly of great surgical importance, which puzzles investigators and claims many victims. The whole subject is discussed in its surgical relationships by Dahlgren (*Beitr. z. klin. Chir.*, Band lxi., Heft 3), who also gives two fatal cases in his own practice, death following in each case a necessary operation for acute appendicitis, and in each case occurring about a fortnight after operation. It is unnecessary here to discuss the justification or otherwise for the classification of hæmophilia into hereditary and non-hereditary, and of the latter into congenital and acquired, which some writers have made. Further, it is well known that the hereditary tendency is usually transmitted through the female members of a family of "Bleeders," but attacks almost invariably the males, the proportion of male to female sufferers being about thirteen to one. There are many theories as to the causation of this peculiar condition, in which uncontrollable hæmorrhage may occur from the slightest injury, some seeking the cause in the blood-vessels, others in the blood, but none explain the facts in a satisfactory manner. It has been attributed to increased blood-pressure or abnormally thin and defective vessel walls, or to a combination of both, but these occur in a far greater degree in other diseases without similar results; it has also been regarded as a scorbutic toxic infection. Most observers have devoted attention to the time required for coagulation of the blood, and Sahli has carried out a prolonged investigation in this direction. He finds that hæmophilic blood shows no deficiency in fibrinogen; that the coagulation time is lengthened if the blood for investigation is taken during the interval between attacks of bleeding and from a freshly-made wound; but that the rapidity of coagulation is actually much greater than normal if the blood is taken from the main wound during a hæmophilic bleeding, and slightly greater than normal if the blood is obtained during an attack of bleeding from a freshly-made wound, or if it is obtained between attacks from a wound which has first been allowed to bleed for several minutes. The addition of traces of defibrinated normal blood to hæmophilic interval blood raises the coagulation time to normal. Sahli concludes that hæmophilic bleeding is probably due to a deficiency in the cells and vessel walls of a "thrombokinase or zymoplastic substance" essential for the formation of fibrin ferment. Sahli's theory or hypothesis leaves many questions unanswered, such as the fact that the uncontrollable bleeding may not appear till several days after operation, or that a small wound may bleed profusely while a large one may behave in almost normal fashion; in fact, no satisfactory explanation has yet been put forward of this very serious disease in which only 11 per cent. of affected persons live to the age of twenty-two.

Our knowledge of the treatment is as unsatisfactory as of the etiology. Ligature is often impossible owing to the diffuse nature of the bleeding; under-stitching generally results in the needle punctures bleeding more profusely than the original point; the eschar of the cautery is washed away in a few moments; firm and long-continued pressure or plugging, combined with elevation, is sometimes effective. Calcium chloride or lactate, applied locally or given by mouth or subcutaneously, seems of little value. The injection, or application to the wound, of normal human or animal blood-serum—antidiphtheritic serum being an easily obtainable form—is in some cases successful, its use being based on Sahli's theory. The value of subcutaneous or intravenous injection of sterilised gelatine, which is believed to increase the coagulability of the blood, is not proved. Adrenalin seems only to have an evanescent effect, and ergotin seems to be ineffective. Some success has been attributed to the administration of ovarian extract, and also of thyroid extract. Proprietary substances, such as zymoplasma and stypticin, are also on the market. Local injection of cocaine is believed by one observer to be an adjuvant to plugging. Apparently local pressure on the bleeding surface is the most effective method, though any of the other methods may be combined with it. But with regard to hæmophilia, the greatest importance must be attached to prophylaxis, avoidance of the slightest injury, and of any surgical procedure whatever except where absolutely necessary for preservation of life.

PATHOLOGY.

By JAS. RITCHIE, M.A., M.D., M.R.C.P.,
Superintendent of the Laboratory of the Royal College of Physicians, Edinburgh.

The Phenomena of the "Serum Disease."

The cause of "anaphylaxis," or that susceptibility to repeated injections of serum which can, under certain circumstances, be originated in animals, is not only important from the scientific standpoint but also from its practical bearings, for, from time to time, the phenomenon is seen in cases where sera have been injected in patients for therapeutic purposes. In this connection the recent paper of Briedl and Kraus (*Wiener medicinische Wochenschrift*, 18th March 1909) merits attention. These observers studied the phenomenon in dogs which received intravenously doses of horse or ox serum twenty-one days after the subcutaneous injection of a small dose of a like serum. Within a minute severe symptoms appear—an initial restlessness and vomiting being succeeded by depression, muscular weakness and intermittent dyspnœa.

This continues for some hours, and ends either in death or in gradual recovery. Having obtained evidence that the condition was not due, as has been supposed by some, to an effect on the central nervous system, Briedl and Kraus inquired whether the occurrences observed could be accounted for by changes in blood-pressure. They found that the injection of the serum caused a fall in blood-pressure from 120-150 mm. to 80, 60, or even 40 mm., with a rapid pulse of small volume and interference with respiration. The lowness of the blood-pressure was proportional to the severity of the symptoms, and a rise occurred in cases where the recovery was to take place. According to their view the cerebral anæmia induced by the slowing of the circulation sufficiently accounts for the nervous symptoms observed. With regard to the mechanism of the fall in blood-pressure, they class it, not with those cases where the heart is primarily at fault, but with those due to diminished peripheral resistance—especially here in the splanchnic area. The most important part of the work is that relating to the means by which the tendency to lowering of blood-pressure may be overcome. Neither stimuli acting centrally nor those acting on the peripheral nervous mechanism of the blood-vessels had any effect. The administration of adrenalin, for instance, to the anaphylactic dogs had practically no effect. It was found, however, that the injection of barium chloride not only caused an immediate rise in blood-pressure when anaphylaxis had occurred, but if this agent was introduced before the administration of the toxic serum the evil effects of the latter were obviated. As barium chloride acts directly as an excitant of non-striped muscle fibre, the conclusion was drawn that the phenomena of anaphylaxis are essentially due to a paralytic action on tissues of this class.

The Bacteriology of Whooping-Cough.

Within recent years several observers have brought forward evidence in support of the etiological connection of bacteria of the influenza group with whooping-cough. Of the papers published on the subject, those of Bordet and Gengou (*Ann. de l'Institut. Pasteur*, xx. 731 ; xxi. 720) have perhaps attracted most attention. These investigators isolated from the white leucocytic parts of sputum expectorated during the height of a paroxysm a minute Gram-negative non-motile bacillus, which grew in very transparent colonies, on a medium composed of equal parts of human blood and agar made up not with peptone but with 6 per cent. salt solution containing 25 per cent. of a glycerine extract of potato. Producing colonies scarcely visible in the tubes originaliy infected from the sputum, the organism in sub-cultures grows readily and presents characters which enable it to be differentiated from the influenza bacillus. The arguments brought forward for this organism having a causal relationship to the disease were its presence in the

characteristic sputum during the height of the affection, and especially its relations to specific qualities of the serum of whooping-cough patients. Such sera, according to Bordet and Gengou, on the one hand, possess specific agglutinating properties, and, on the other, manifest the capacity of deviating complement, *i.e.* when mixed with the bacterium the serum can absorb the complement necessary to complete a hæmolytic combination. The observations of Bordet and Gengou have, generally speaking, been confirmed by Arnheim (*Berlin. klin. Wochenschrift*, 1908, No. 31, p. 1453), Fraenkel (*Munch. med. Wochenschrift*, 1908, No. 32, p. 1683) and Klimenko (*Centralb. f. Bakteriol. u. Parasitenkund. Orig.*, vol. xlviii. 64). The pathogenic qualities of the organism have been shown to be low—a whole agar culture being required to kill a guinea-pig. The changes produced in such a case are those found in many other cases of bacterial intoxication, and show no special characteristics; but Klimenko, working with apes and causing infection through the respiratory tract, in several cases produced an illness in which pulmonary symptoms were prominent, and in which, when death occurred, catarrhal changes in the lungs were found. In a recent paper (*Bull. de l'Acad. Roy. de Médicine de Belgique*, 4th ser., t. xxii., 1908, p. 729) Bordet, reviewing the work done since the publication of his original papers, finds it confirmatory of his conclusions. While it cannot be said that the etiological relationship of Bordet's bacillus to the disease has been established, the various observations referred to are of great interest. In the absence of absolute proof great care must be exercised in attempting to appreciate the significance of the occurrence of influenza-like bacteria in diseases of the respiratory tract. Even in influenza itself it cannot be said that the claims of the influenza bacillus to be the cause of the affection are above suspicion, and there is little doubt that this organism is but one example of several allied bacteria frequently found in respiratory affections; the presence of such bacteria may or may not have pathological significance. In connection with Bordet's whooping-cough bacillus, it may be said that attempts have been made to produce a serum capable of producing prophylactic or therapeutic effects. Little success has attended these efforts—this being probably largely due to the low toxicity of artificial cultures of the organism.

Protozoa of the Leishmania Group.

During the past eighteen months several important new observations have been made relating to the protozoal parasites, which for want of sufficient knowledge as to their morphological relationships are at present provisionally grouped under the generic name of Leishmania. In 1905 Pianese (*Gazz. intern. di Medicin.*, viii. 8) described certain cases of illness occurring in children in Italy which were characterised by irregular fever, anæmia, enlargement of the spleen, and to a less

extent of the liver, by œdema and cutaneous hæmorrhages. Post-mortem, Pianese found bodies in the kidney, liver and marrow which had the relations to the tissue cells seen in the parasite of kála-ázar, and which he considered to have a similar nature. During 1908 Nicolle and fellow-workers (Nicolle, *Compt. Rend. Acad. Sc.*, cxlvi. 498; Nicolle and Comte, *ibid.*, 789 ; see also *Bull. de l'Institut. Past.*, vi. 416) published a number of papers relating similar observations in children in Tunis. Nicolle further proved the protozoal nature of the supposed parasites by obtaining from the spleen juice cultures of a flagellated organism having the same characters as that cultivated from cases of kála-ázar by Rogers and by Leishman. On inoculating dogs with splenic pulp containing the organism he, in one case, succeeded in getting evidence of proliferation having occurred in the body of the animal. This led him to inquire as to the possibility of the dog being the natural carrier of the infective agent, and on examining the bodies of a number of dogs destroyed in Tunis he found in four cases that the organism was present in the spleen or bone-marrow. Nicolle, Comte, Manceaux and Cortesi (*Arch. de l'Instit. Past. de Tunis*, iv. 143) have also succeeded in causing infection of the monkey, and Nicolle's results in the dog have been confirmed by Novy (*Journ. Amer. Med. Assoc.*, 1908, p. 1423). Whether the organism obtained from these infantile cases is identical with that of kála-ázar has still to be settled, as inoculation experiments with the latter in India have been unaccompanied by results. Nicolle suggests that meantime the organism described by him should provisionally be denominated a new species under the name of Leishmania infantum.

The discovery by Homer Wright of a Leishmania (now known as L. tropica) in an "Oriental boil," occurring in an Armenian immigrant into America, has recently been amply confirmed in various parts of the world—in Russia by Marzinowsky (who apparently made observations independent of those of Wright, *Zeitschrift f. Hyg.*, lviii. 327), by Manson in a case from Bagdad, and by Nicolle (*Compt. Rend. Acad. Sciences*, cxl. 842) in Algeria. The last observer also succeeded in obtaining cultures of a flagellate similar to those of L. donovani and L. infantum. Similar success in making cultures has since been recorded by Row in India (*Brit. Med. Journ.*, 1909, i. 746). There thus seems little doubt that the existence of this Leishmaniosis (to adopt the French terminology) has been definitely established.

In the cases of all the diseases associated with protozoa of this class the problems of how transmission of infection takes place are still unsolved.

DISEASES OF CHILDREN.

By G. H. MELVILLE DUNLOP, M.D., F.R.C.P.,
Physician, Royal Hospital for Sick Children, Edinburgh.

A Report upon One Thousand Tuberculin Tests in Young Children.

In a recent paper Holt gives the results of a thousand tuberculin tests in hospital cases, the majority of whom were under two years old. For a certain period every child admitted was subjected to some form of tuberculin test as a routine measure, unless some positive contra-indication existed. These routine tests proved of considerable value, revealing cases of tuberculosis in many cases not hitherto suspected.

The ophthalmic test was made 615 times; in most instances only one test was made, but in questionable cases the test was repeated. The tests were made with tuberculin precipitated with 65 per cent. of alcohol. Before using, it was freely dissolved in a sterile saline solution. From a $\frac{1}{2}$ to a 1 per cent. solution was used, and especial care was taken not to use tuberculin in an eye which was the seat of disease, tuberculous or otherwise. As a further precaution, the hands of the children were confined during the first 12 hours to prevent any rubbing of the eye.

In 38 absolutely certain cases of tuberculosis the test was positive in 25, negative in 10, and doubtful in 3 cases. In 21 cases of probable tuberculosis the test was positive in 19, and doubtful in 2 cases.

In 556 cases probably not tuberculous the test proved positive in 2, negative in 546, and doubtful in 7 cases. When the test is positive it is followed by congestion of the conjunctiva, with some swelling and increased secretion of mucus, which is sometimes very abundant. The symptoms usually begin in from 6 to 8 hours after the tuberculin is used, and reach their height in 24 hours, afterwards gradually fading. The usual duration of the symptoms is from 1 to 3 days, but in 12 per cent. of the cases the symptoms lasted longer. In one case the reaction lasted 10 days, but in no case was the test followed by unpleasant results. Holt attributes this immunity from accident to the precautionary measures taken.

So far as could be ascertained neither the character of the reaction nor the frequency with which it occurred were affected by the age of the child, nor by the extent, nor the activity of the pathological process, but only by the susceptibility of the patient. In no case were positive reactions obtained in dying children or in those suffering from extreme prostration.

The skin test of Pirquet was employed 217 times. It was made

with crude tuberculin diluted with sterile water to a 25 per cent. strength. The tuberculin was rubbed into 3 short linear scratches on the forearm made with a sterile needle. The skin was allowed to dry and covered for a few hours with a piece of sterile gauze.

The first sign of reaction appears in from 6 to 12 hours, rarely later than 24 hours, and consists in a bright areola slowly spreading from the line of scarification. The more pronounced reactions are accompanied by an induration readily palpable. The reaction reaches its height in most cases in from 24 to 36 hours, after which it fades rather slowly, usually lasting 2 or 3 days, but not infrequently for a week or even longer. It may be followed by slight desquamation, but vesication is not observed.

In 22 absolutely certain cases of tuberculosis there was a positive reaction in 12 and a negative reaction in 10 cases. In 20 cases of probable tuberculosis there was a positive reaction in 15 and a negative reaction in 5 cases. In 172 probably not tuberculous cases there was a positive reaction in 6 and a negative reaction in 166 cases. The skin test possesses the advantage of ease of application, and in no instance was there any disagreeable symptom. With more than 1 scarification for control, there was no difficulty in recognising a positive reaction.

Injections of tuberculin were employed 130 times. The injections were made deeply into the muscles and no local reactions were observed. The average temperature reaction, which usually begins in about 6 hours and reaches its maximum in 13 hours, was 103·3. It remained at this point for from 6 to 8 hours and then rather rapidly fell to normal. As a rule, the larger the dose the more rapid was the reaction and the higher the temperature.

With the exception of some constitutional disturbance and an occasional general erythema, no serious consequences supervened in any of the cases.

In 28 cases of absolutely certain tuberculosis a positive reaction occurred in 22, a negative reaction in 2, and a doubtful reaction in 4 cases.

In 21 cases of probable tuberculosis a positive reaction occurred in 18, and a negative in 3 cases.

In 80 cases probably not tuberculous a positive reaction occurred in 1, a negative reaction in 78, and a doubtful reaction in 1 case.

It will be seen that some failures and some unexplained reactions occurred with all the tests, so that the result with any test cannot be regarded as conclusive, although a positive reaction creates a strong probability that tuberculosis is present.

In ease of application there is a decided advantage in the skin test, the scarification is trifling, the patient does not require continuous observation, and the reaction lasts a considerable time. The ophthalmic cases need closer watching, and the reaction is shorter and may

be missed. There are also cases reported where a very prolonged and intense reaction has occurred, and when pathological eye conditions have been present disastrous results have occurred. For general use, therefore, the skin test is to be preferred.

With the temperature reactions there exists the possibility that a latent process may be lighted up, which is a decided objection to the use of this test. All the tests have been too recently introduced to permit the final word to be spoken regarding them. No one of them is absolutely conclusive, and though they furnish strong probability of the existence of a tuberculous lesion they do not enable us to distinguish between a latent and active condition.

While of great assistance in diagnosis, the tests should always be taken in conjunction with the general symptoms and physical signs. Taken apart from them they may be very misleading.

OPHTHALMOLOGY.

By W. G. SYM, M.D., F.R.C.S.,
Ophthalmic Surgeon to the Royal Infirmary, Edinburgh.

Trephining for the Relief of Choked Disc.

It is now a good number of years since operation was advised and carried out with the view simply of preventing that blindness which is sure to follow or accompany the gradual atrophy of the discs which comes on as choked disc passes off, apart altogether from the intention to eradicate a cerebral tumour. Physicians are, we fear, not always so thoroughly impressed with the urgency of operation as they might be: they are anxious to wait for localising signs, and very naturally and properly so, but it is necessary, in the interest of the unfortunate sufferer from optic neuritis, to realise that localising symptoms may never appear at all, or may at least be delayed until all hope of saving vision is quite departed. The question is, in a case presenting as its chief features headache, vomiting and optic neuritis, what is to be done? Appropriate internal remedies should by all means be given, but if no immediate and decided relief is achieved the neuritis will pass on into atrophy, and, to add to his other misfortunes, the patient will have to endure that of hopeless blindness. Time in such a case is of enormous value, and there is good, very good, prospect that if the skull is opened before the neuritis has passed a certain stage, vision may be retained all the patient's lifetime. In saying these things we are far from advocating a hasty or ill-considered drastic line of treatment, merely that in each case the question whether the time has not *now* arrived for surgical interference should be considered in all its bearings.

On this matter several recent papers of greater or less moment have appeared. The most important of these is one by von Hippel (Jr.), which was read at the latest Heidelberg Ophthalmological Congress. He remarks that in France and Germany these points appear to have received less attention than they have in Great Britain and America. Let it be clearly understood that we are not now dealing with operation for the removal of cerebral or cerebellar tumour; we speak meantime solely of trephining or "decompression" for the relief of choked disc. Some of the recent writers, those from America for the most part, wish the terms "choked disc" and "optic neuritis" done away with, and "papillo-œdema" substituted, but since we are still not quite satisfied as to the cause and mechanism of production of the sign, perhaps it would be as well to discard nothing too hastily.

Gunn, who has done more work upon the medical side of ophthalmoscopy than anyone else, divides the progress of choked disc into five stages or degrees, quite conventionally, but in a manner very convenient from a practical point of view. But it must always be borne in mind that there is no obvious connection between the process going on in the nerve on one hand and in the tumour on the other. Thus in one case the patient had distinct symptoms of brain tumour for more than a year, but the disc showed changes for the first time within a week of his death; in others, the neuritis comes on, runs its course, and subsides into an atrophy, while all other symptoms may be in temporary abeyance.

A paper by De Schweinitz and Holloway deals to a considerable extent with the fact that while one should not be too hasty in deciding that it is too late to operate, one should also realise that the conditions of success are much better attained by operation as early as possible. They considered carefully the relation between the date of operation and the state of vision before and after. They decide that the prognosis as to sight is "most favourable" if the stage reached by the choked disc is the first, the second or even the third, but that later operation in the fourth or the fifth stage, though more dangerous, it being a little apt to be followed by deterioration of vision, may, on the other hand, be productive of benefit, while no other treatment known is of any avail.

De Schweinitz cites evidence to show that even brief delay is very disastrous to the value of the vision permanently secured. Thus, in one case operation was urged but refused while vision stood at 6/7·5 for the right eye and 6/9 for the left eye. In little over three weeks it fell to 6/45 in each eye, when trephining was permitted; sight remained at that in one eye and improved to 5/15 in the other. If, then, vision was not lost at all after operation at so late a stage in the case of one eye and improved in the case of the other, we are fairly entitled to assume that had trephining or decompression been per-

formed while vision was more nearly normal it would have remained so. In this individual case, too, the result was unusually favourable, because by the time the fourth, and certainly the fifth, stage is reached, atrophy has begun and compression of the nerve fibres by the contracting fibrous exudate goes on, so that, though a comparatively favourable result may be secured in an odd case, there is but little use, speaking generally, in trephining so late, if one hopes to secure even a moderate amount of sight. Even then, however, the patient may have secured to him enough sight to recognise objects moving, and perception of light and darkness, and only those who have had to do with the blind know how greatly even such rudimentary vision is prized. The point to be made is briefly this: because a man has a cerebral tumour whose precise situation one has not means of exactly determining, that is no reason why he should be allowed to become blind when a simple and not really very dangerous operation will most probably preserve sight, at all events for a long time. The objection is sometimes raised, that by relieving the pressure one may mask the symptoms and have increased difficulty by and by in localising the tumour, but "the patient purchases only a very slightly increased chance of life at the cost of certain loss of sight." And besides, as is well known, there are cases in which all the signs of cerebral tumour are present, and yet during life and even post-mortem no tumour may be found.

Four classes of disappointing results have been noticed following upon trephining, and it is quite right when advocating the performance of the operation that these should be frankly recognised to exist. They are—(1) that in a few cases the very opposite result to that which is expected has occurred, viz. vision has rapidly and permanently failed and died away: the cause of this can meantime only be guessed at. (2) That there is no immediate improvement; though after considerable delay vision may greatly improve. (3) That for a time the appearances in the fundus may become worse, with greater œdema of the disc, &c., though in these cases also the result is good, even if improvement may be a little delayed. (4) That sight in one eye may be lost, though retained in the other. One should in fairness add, too, that in a varying proportion of cases a fatal result has succeeded the performance of the operation.

The case for trephining rests of course upon the assumption that increased intra-cranial pressure is definitely the cause of the choked disc, and that relief of this pressure, provided the relief comes in time, will lead to the disappearance of the evil symptoms and the evil process. We do not need to enter upon the vexed question meantime of the mechanism of production; but all or nearly all will agree that while this or that theory may fit the majority of the cases, the one morbid condition present in all is this increased pressure. Certainly no theory which leaves the pressure question out can be expected to

hold the field, and in the present state of our knowledge we are undoubtedly not merely justified but called upon to afford our patients the good chance of relief afforded by decompression.

Miners' Nystagmus.[1]

In regard to this very typical variety of occupation neurosis there is, perhaps, nothing very new to report, but some very interesting work in connection with it has been recently done by Drs. Dransart and Famechon, who practise in the region of the great coal-fields of Belgium, and who have embodied their work in a report to the Royal Belgian Society of Medicine, which is deserving of careful attention in this country. They bring forward some points with which one is not so familiar as one is with the occurrence of nystagmus in coal-getters who work in constrained attitudes in dark mines. Speaking parenthetically, and not quoting from the Belgian authors, we are not sure that it is so well known as it might be that the miners themselves often attribute nystagmus to the safety lamp! And in their contention there is this small grain of truth, that from the safety lamp only a relatively feeble illumination is obtained, and—not to enter upon a controversial statement—all authorities agree that insufficiency of illumination is at least one of the contributing causes of nystagmus. That the illumination element—to return to our Belgian authors—is one of no small moment is shown by the extraordinary disparity in the relative incidence of nystagmus between the results of two examinations of the miners of a certain place by one of the writers. At the first investigation he found among the miners 5 per cent. who suffered from nystagmus; a few years later, 15 per cent. of them were affected by the malady. All the conditions of work were precisely similar on the two occasions, save this one factor, that at the earlier examination the mines were being worked with naked lamps, and at the later the use of the safety (Davy) lamp was rigorously enforced. The difference in the illumination then appeared to account for a rise from 5 per cent. to 15 in the incidence of nystagmus.

M. Romiée of Liége, who read a very interesting but highly controversial paper on this subject in November last to the same Society, holds very strongly the belief that the enfeeblement of the light given by a safety lamp, as distinguished from a naked light, is the most important factor of all, and that consequent failure of accommodation, and not the strained attitude of the eyes, is the determining element. He goes so far as to say that the disease only appeared after safety lamps were employed, for it was never mentioned before 1861 by any writer. The argument is a little inconclusive, for if one were to carry it out one must believe that there was no exophthalmic goitre

[1] Brussels, *Bulletin de l'Académie royale de Médecine de Belgique*, 1908.

before Graves was born, no immobile pupil before Argyll Robertson, and no acromegaly before Marie, which, as Euclid says, is absurd.

To pass from this point, nystagmus must be regarded not merely as a result of injury in the wide or occupational sense, but to some extent as a result of injury in the narrower sense, and certainly as an aggravation thereof, perhaps even as a cause of injury. As thus, let a nystagmic eye be injured, say by the presence of a foreign body in the cornea or by a cut of the globe, does such an eye enjoy as fair a chance of healing soundly and quickly as a normal, steady one? Obviously not. Miners are very liable to ulcers of the cornea: the constant irritation caused by the incessant movement of the eye rubbing upon the lid must militate against rapid and secure healing. Probably enough, too, the unsteady eye may be more liable to receive injury, for it is less under the control of its possessor than the normal, and when such an eye is damaged any way, the likelihood of nystagmus arising is much greater than before. This is true not merely of injury to the eye itself, but to a less degree, perhaps, of injuries to the head and to intercurrent affections of different classes too, for any circumstance which lowers the vitality and nervous energy of the man may assist in the causation of nystagmus. In this connection the influence of alcoholism is often very marked, as has for long been recognised.

The authors draw attention further to a variety of nystagmus which has been noted too by Snell in England and by Nieden in Germany, namely, latent nystagmus. A miner presents himself on account of some intercurrent malady and is found to have "dancing eyes," but does not spontaneously complain of any annoyance arising therefrom. It is quite possible that the actual lesion on account of which he presents himself may aggravate the nystagmus and cause it to become a serious symptom, but it is certainly manifest that there is here a splendid opportunity for a claim for excessive damages for slight injury. For even granting the perfect probity of the claimant, a trifling occurrence may thus give rise to a great aggravation of the symptoms produced by a lesion which was present before receipt of the injury. There is another condition in strong contrast to latent nystagmus, which perhaps is not too well recognised at present. A miner may complain of the symptoms of nystagmus, and yet under ordinary conditions no oscillation of the eyes can be seen objectively, even on ophthalmoscopic examination, when the magnification under which the eye is seen, enlarging the area of excursion, ought, one would suppose, to make the movement obvious. In such a case, either of two manœuvres will prove helpful: nystagmus may become obvious either if we reduce the illumination or if we cause the patient to assume the particular strained attitude in which he is in the custom of working in the mine.

Another point bearing on the medico-legal relations of nystagmus

is made by Dransart and Famechon, viz. that a nystagmic miner cannot possess so precise orientation as the normal man, and is therefore himself a source of enhanced risk to his fellow-workmen. This suggestion strikes one as academic rather than practical.

Numerous other matters connected with nystagmus but of minor (save the mark!) importance are dealt with in this valuable record, such as clonic blepharospasm of miners, and nystagmic amblyopia.

The general trend adopted in modern Acts of Parliament passed in the interests of the working classes, and the abundant opportunities which they unfortunately afford for chicanery and deceit, render a close study of miners' nystagmus not less important in such a country as ours than it is in Belgium.

H. v. Hippel, von Graefe's *Archiv. für Ophthalmologie*, lxix. 2.

De Schweinitz and Holloway, *University of Pennsylvania Medical Bulletin*, January 1909.

DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P.,
Consulting Physician,
and
R. CRANSTON LOW, M.B., F.R.C.P.,
Assistant-Physician for Diseases of the Skin, The Royal Infirmary.

Treatment of Eczema by Unrefined Coal-Tar.

Tar has been for long employed in the treatment of eczema, but as a rule in a dilute form. Brocq, however, advocates the use of crude coal-tar after a plan suggested by Dind of Lausanne (*Bul. de la Soc. Française de Dermat. et de Syph.*, Paris, December 1908). He commences by cleansing and purifying as much as possible the surface to be dealt with. When we have to do with a weeping eczema covered with crusts or scales, or complicated by pyodermatitis, moist dressings ought to be applied for twenty-four to forty-eight hours, or longer if necessary, either directly or over a layer of zinc paste. All pustules are to be opened, then touched with solution of nitrate of silver. When the diseased area is clean it should be carefully washed with boiled water. If not too sensitive we may employ soap, or pass over it a pledget of cotton-wool moistened with ether. The crude coal-tar is next put thickly on and allowed to dry. This is one of the most important points of the technique, as the longer the layer is permitted to dry the more efficacious is the method. Twenty minutes is the minimum, but better several hours, then it is dusted freely over with talc, bandaged, or a linen dressing applied. If the skin is not too much inflamed, and when the oozing is not great, it is well not to disturb the dressing earlier than two days, and if at the end of that time the aspect of the

integument is satisfactory, it is sufficient to dust on the powder till all trace of the tar has disappeared, which occurs, according to the intensity of the desquamative process, from the third to the sixth day. If requisite, a fresh application of the tar is then made. But if the skin is severely inflamed, if there is copious oozing, if complaint is made of smarting, stinging or itching, it has seemed useful, on the first or second day after the first application of the tar, to dress the surface with plain or ichthyolated zinc paste. This causes rapid separation of the tar, and can be suitably employed to cleanse the tarred area when desired. On the fifth to the seventh day a second application of the tar may be made. This procedure has given excellent results in itchy skin affections, and in particular in obstinate vesicular oozing ones. It modifies in a truly surprising manner chronic weeping eczemas of the lower limbs, provided that absolute rest, or at least relative confinement to bed, is observed. The number of applications of the tar varies from three to five, in order to bring the skin into a condition analogous to a cure. In some cases, when the inflammation, the oozing and the swelling of the integument are very pronounced, it may take from six to nine hours to dry the limb completely. As a rule, Brocq has seldom found a topical remedy so readily tolerated by the inflamed skin. The colour is the sole drawback, which renders it unsuitable for the hands or face.

Jambon (*Ann. de Dermat. et de Syph.*, Paris, January 1909) corroborates and amplifies these observations. Though coal-tar owns various sources, that from the gasworks of Lyon proved, on the whole, satisfactory. The occasional presence of ammoniacal water, if irritating, could be got rid of by heating. It also contains coke dust in a state of fine division, which imparts a degree of porosity, so that it can absorb the secretions. Tar is best applied by means of a large brush of medium hardness, giving a uniform coating. The preliminary cleansing is carried out in the same manner as by Brocq, but if one is dealing with an infected surface, or where secondary infection is suspected, as in most cases of oozing eczema, he believes it advantageous to prelude the tar by bathing with a solution of methylene blue, 1 in 150 to 1 in 200, in distilled water. This prevents the development of the staphylococci or streptococci under the tarred surface. He does not approve of powdering the tarry coating with talc, as this produces a hard mass, destitute of permeability, even though it promotes the more rapid drying of the tar. Instead, he covers it with two or three turns of unstiffened gauze, which when removed after some hours leaves the skin invested with a thin layer of dry coal-tar. The skin so treated may inflame and crack owing to deficiency of natural unctuousness or from delicacy of texture in special situations, and in such circumstances equal parts of tar and pure lard can be used. Should removal of the layer be desiderated, a pledget of absorbent cotton-wool soaked in almond oil both cleans away the tar and soothes the skin. This is but

seldom required; it is preferable to allow the tar to separate spontaneously or with gentle friction. In its action, when applied to a surface denuded of its keratinised layer, it behaves as a protective, permeable varnish. This is antiseptic, keratoplastic and durably antipruriginous, while favouring mitosis in the deeper layers. Since the phenic acid contained in it may give rise to small but troublesome ulcers or necroses, its action should be watched. Hyperkeratotic eczema of the palms and soles is not benefited by tar in this way; the fissures are even aggravated.

THE CUTANEOUS SYMPTOMS OF HUMAN TRYPANOSOMIASIS.

It is now well known that the white races enjoy no immunity from sleeping sickness, and Darré (*Ann. de Dermat. et de Syph.*, Paris, December 1908) has in course of three years been privileged to study twenty cases in Europeans. It is all-important to diagnose this fell disease early, for, though time enough has not elapsed to enable one to speak confidently of cure, still, if a case be treated promptly there is reasonable hope that the development of the nervous phenomena which constitute its chief danger may be retarded or even obviated. From the onset of the ailment to the appearance of these nervous symptoms a long period elapses—never less than some months and nearly always several years. The diagnosis during this period is difficult and obscure, yet it can usually be recognised early by attention to a group of special symptoms which have hitherto attracted scanty notice. Some hours after the puncture made by the glossina—the sole mode of communication till now discovered—in certain cases redness and swelling manifest themselves on the site or sites, accompanied by smarting and tension rather than pain. Next day the aspect is that of a tumefaction, or red or violaceous blotch, slightly tender and combined with swelling of the neighbouring lymphatic glands. Commonly the reaction is trivial and transient, but there may be severe inflammation, ending in resolution. These phenomena do not seem traceable to a multiplication of the trypanosomes on the spot, rather to the introduction of some irritant secretion, but they are useful in fixing the exact date of infection, and thus the duration of incubation. There are other cutaneous manifestations noticed during the full development of the disease, and taking on one of two types of eruption—either a vesico-papular one, accompanied by pruritus, or non-pruriginous polymorphic erythemata. The morphologic aspect of these erythemata is not uniform—now it is an erythema in patches, now a circinate one. In the majority of cases both types exist at once, one or other predominating. They may be temporary and recurring, more frequently persistent, lasting weeks or months, but varying in intensity. The drugs at our disposal to combat trypanosomiasis have a remarkable effect on the eruptions, which they cause to disappear in a few days. Too much stress must not be laid on the pruritus, even though severe,

as skin diseases associated with itching are frequent in those who have lived in Africa. Still, it is probable that trypanosomiasis can itself determine pruritus, either by direct irritation of the skin, as the trypanosomes locate themselves in the capillary network of the derma, or indirectly by the intermediary of the central nervous system, as at all stages sleeping sickness attacks the nerve centres, which betray their implication by disturbance of sensibility. The clinical analogies which exist between the spirochæte pallida and the trypanosomes have been noted by observers. While the spirochæte determines an inflammation of the connective and vascular elements of the derma, which can occasion in the skin the whole gamut of lesions from the macular roseola to the gumma, the Trypanosoma Gambiense sets up only a slight reaction of the same elements with inconsiderable though identical lesions, whatever the virulence and duration of its action on the integument.

The Faviform Trichophytons.

In course of his investigations into the fungi of ringworm, Sabouraud has met with a few cases where the trichophyton exhibited characters *sui generis*. The cultures grew with extreme slowness, and, to his great surprise, they acquired, little by little, features analogous to those of the achorion of favus. Nevertheless, preparations of the diseased hairs demonstrated a trichophyton ectothrix with large spores in chaplets, and typically of animal origin. He has now published his researches in a copiously illustrated article (*Ann. de Dermat. et de Syph.*, Paris, November 1908), and draws the following conclusions:—There exists a very important group of trichophytons having a faviform culture, one resembling that of the achorion of Schoenlein. There are, however, differences from that of ordinary favus, and we can even differentiate several species. In addition to the trichophyton verrucosum described by Bodin there are two others—one characterised by its yellow ochre hue (trichophyton ochraceum), the other by its tint like white wax (trichophyton album). All appear to derive their origin from cattle or horses. In man they produce on smooth parts circinate impetiginous lesions, and on hairy regions a form of ringworm which almost constantly degenerates into kerion. In addition, these trichophytons can evoke on one and the same person eruptions composed of numerous circles, rose-coloured and scaly. Microscopically they invade the hair and surround it, constituting a thick sheath of huge spores outside, and only mycelial filaments within its substance. These trichophytons are readily inoculated on the guinea-pig, but without occasioning on it lesions differing from types of ringworm. On the tenth day the hairs are found affected precisely as those of man. The disease terminates spontaneously in the guinea-pig on the thirtieth day.

Dermatitis in Lime-Workers, &c.

Although acute dermatites due to irritants of various sorts are usually easily recognised, there is a less well-known group of cases where peculiar lesions are produced by long-continued applications. The form of eruption is important, inasmuch as it comes under the category of trade eruptions. The commonest type is that due to lime and plaster of Paris in various forms. It is therefore seen in masons, tanners, leather-workers, galvanisers, German-silver polishers, bleachers and stucco-workers. The lesion is a very characteristic one, and consists of a series of ulcers on the fingers. These are rounded or oval, and when oval commonly run in the long axis of the digit. They vary in size from a millet-seed to a bean. The centre is punched out, the edge being sharply defined and almost perpendicular. The centre is often covered with a crust, which on removal reveals a bright red floor. Usually there is no sign of inflammatory redness around the margin of the lesion. The ulcers are multiple, and generally arranged on the sides of the fingers. They are always tender to touch, and sometimes spontaneously painful. They rapidly reach a certain size, and do not tend to extend further. Oskar Neugebauer (*Archiv. f. Dermat. u. Syph.*, Bd. xciii. 1 u. 2 Heft, Vienna, 1909) reports ten such cases, all in workers in lime. In some of these he was able to find in the centre of the sores white particles of lime, which were firmly embedded in the lesion. In order to prove if lime was capable of producing such lesions he performed on himself a series of experiments by rubbing slaked lime into the skin. He admits that the conditions were not the same as those under which a worker in lime finds himself. In the case of the worker there are often other factors, *e.g.* strong acids, which are also used. The worker likewise has to continue his occupation after an initial injury has been done to the skin, whereas in the experiments the skin was at rest. Nevertheless, he found that when the skin was subjected to injury, *e.g.* by maceration for a time in water and then lime rubbed in, ulcerative lesions similar to those seen in the workers could be produced, but such lesions were not evoked without some previous injury to the skin. If the patients stopped work the lesions soon disappeared, but on the average they required to be idle for about ten days. He also records cases of a somewhat similar ulceration seen on the hands of men employed in discharging cargoes of soda and in workers in sulphuric acid. Sulphuric acid is employed to remove rust from iron plates, &c., and causes a brownish discoloration of the whole skin of the hands, and a series of ulcers, which are deep in the centre and have a terraced edge, with, in a few cases, signs of inflammation around. In these cases the lesions take much longer to heal than in the case of ulcers due to lime, the patient requiring to cease work for at least a month.

NEW BOOKS AND NEW EDITIONS.

Design in Nature. By J. Bell Pettigrew, M.D., LL.D., F.R.S., F.R.C.P. Three Vols. Pp. 1416. Figures 2000. Longmans, Green & Co. 1908. Price £3, 3s. nett.

Scientific men, as a rule, develop slowly. Professor J. Bell Pettigrew was a remarkable exception to the rule. While studying anatomy in the University of Edinburgh he carried out, at the suggestion of Professor Goodsir, his valuable researches into the arrangement of the muscular fibres of the heart, and so great was his success in throwing new light on this difficult process, that he was invited, while still a third-year student, to deliver the Croonian Lectures in London. At a later date Dr. Pettigrew was engaged as assistant at the Royal College of Surgeons in London, where he prepared many of the very beautiful dissections now to be seen in the museum. His researches upon the subject of Animal Locomotion led to his recognition at an early age as the leading authority on the subject. Perhaps he shared that position with Marey, but he makes a strong claim that the Frenchman borrowed a good deal from him, with quite inadequate acknowledgment. After his appointment to a chair in St. Andrews, however, comparatively little was heard of Professor Pettigrew as a scientific investigator, and doubtless some will find an explanation of this in the evidence afforded by the present voluminous publication, that Professor Pettigrew, in spite of the brilliant promise of his youth, failed to keep in touch, or in sympathy, with the progressive scientific thought.

Professor Pettigrew died in January 1908. The manuscript of *Design in Nature* was quite completed by the author, and a good part of it was printed under his direction. The main object of the work is "to trace design, order and purpose in the inorganic and organic kingdoms, especially the latter." The accomplishment of this purpose the author evidently regards as carrying with it the confutation of all who hold in any form the doctrine of evolution. While he does not bind himself by the very letter of Scripture, he believes the Mosaic account of the origin of life to be substantially correct, and holds that all the various races of living things which have appeared upon this globe have resulted from special separate acts of Creation. His attitude towards the Darwinians may be indicated by a quotation. After arguing that the study of Egyptian antiquities affords evidence of the stability of type of men, horses, oxen, dogs and cats, he goes on to say: "In presence of such facts it is too much to ask a reading, reflecting, reasoning public to take the theory of evolution on trust, and to be satisfied with the gratuitous assertion that 6000 years are of

no account in the production of plants and animals. Such unquestioning credulity would not be asked for in any other department of natural science. So long as facts hold the field, it is vain for fiction in any form to obtain a footing."

The doctrine of evolution, however, has surely obtained a very considerable footing!

In another place, after describing the various insectivorous plants, the author says: "The endless array of accidental trifling modifications and adaptations required, according to Mr. Darwin, to build up the higher plants and animals have, as a matter of fact, no existence. The theory of natural selection implies that animals and plants are their own designers and architects, which they are not."

It will scarcely be expected that an author who can write in this strain will make any very serious attempt to meet the Darwinians on their own ground, and we cannot say that Dr. Pettigrew does so. He rather devotes his energies to pitting the theory of special creation against the doctrine that everything has arisen "by chance and rule of thumb, as many modern scientists affect to believe." Most modern scientists, we should think, will decline to impale themselves on either of the horns of such a dilemma, and we regret to say that we think Dr. Pettigrew's representations of Darwinian doctrine and its consequences are really such as to weaken whatever force there may be in his arguments in support of "design."

But although we do not think these volumes offer any serious challenge to the doctrine of evolution, and although we cannot, therefore, without reservation, praise his work on the grounds on which the author would most have desired to have it praised, we must not conclude this notice without saying that in many respects much praise is due. The author has collected together an enormous amount of most interesting, and often original, matter relating to plant and animal life. The long sections dealing with the flight of birds, for instance, embody the results of his own researches, and are of very special interest at a time when the problem of the flying machine seems so near solution. Other sections dealing with animal locomotion, with the structure of the heart in various species of animals, with the structure of the nervous system (to mention only a few) contain much that is worth reading. The author has written clearly, and the numerous illustrations, which are chiefly original, are admirable. The volumes are clearly printed on glossy paper. The only criticism we have to offer of the get-up of the book is that the lines are rather too long for ease in reading. If the page had been divided into two columns it would have been read more comfortably, but doubtless it would not have looked so well.

Nervous and Mental Diseases. By CHARLES S. POTTS. Second Edition. Revised and Enlarged. Pp. 570. Illustrated with 133 Engravings and 9 Plates. London: Henry Kimpton. 1908. Price 12s. 6d. nett.

THE book under review is one of the numerous small systematic treatises, "written for students and practitioners," which aims at including in a minimum of space a maximum of information. The diseases of the nervous system, the main features of which are well depicted although the descriptions are necessarily brief, occupy 470 pages. The section on mental diseases, which extends to 60 pages, is too concise to be of much value, even for examination purposes. The illustrations are for the most part well chosen. Here and there evidence of careless proof-reading is noticeable, *e.g.* cretinism "is due to an abscess or loss of function of the thyroid gland." The book may, however, be said to fairly satisfactorily fulfil its purpose.

Syphilis de la Moelle. Par PROFESSEUR A. GILBERT et DOCTEUR G. LION. Pp. 93. Paris: Baillière et Fils. 1908. Price 1 fr. 50.

THIS is one of a series of booklets published by Baillière & Son upon a variety of affections. The history, etiology, morbid anatomy, symptomatology, diagnosis, prognosis and treatment of syphilis of the spinal cord are discussed in successive chapters. The references to the literature are almost without exception French, and the book may be described as a good résumé of the views of the French school upon the subject.

Our Teeth: How Built Up, how Destroyed, how Preserved. Described and Illustrated by R. DENISON PEDLEY, F.R.C.S.(Edin.), L.D.S.(Eng.), Dental Surgeon to the Evelina Hospital for Sick Children, Southwark, and FRANK HARRISON, M.R.C.S.(Eng.), L.D.S.(Edin.), Dental Surgeon, Sheffield Royal Hospital, and Lecturer on Dental Surgery and Pathology, Sheffield University. Pp. 99. London, Glasgow, Dublin and Bombay: Blackie & Son, Ltd. 1908. Price 5s. nett.

"THIS book is written and illustrated for all who take an interest in their own health and in the welfare of the community. . . . It seeks to explain what is unknown to the majority of educated men and women, viz. the causes of dental diseases, the means of preventing them, their effects, and the need for their rational treatment."

These quotations from the preface show that the book is intended for the lay public, and, in fact, it answers many of the questions so often put to the dental surgeon by the more intelligent of his patients.

The first half deals with the development, eruption and arrangement of the teeth, and the second with their most common disease—caries—its prevention and treatment. On the whole, the advice given is excellent, although we think that in some directions it might have been amplified with advantage, even though this necessitated curtailing the first half of the book.

The general get-up is all that could be desired, the illustrations especially being singularly beautiful. It is therefore to be regretted that more care was not taken in revising the proofs, as grammatical and other errors are too frequent. More serious are the misstatements of fact. To instance just two—No competent authority now believes that human enamel contains 3 per cent. of organic matter, and the explanation given of the calcification of dentine, though once widely accepted, was discarded even by its author many years ago.

However, the primary object of the authors, which is to point out how the teeth may be preserved, has been fulfilled, and such inaccuracies as we have cited matter but little to the general public, who will find the book most interesting, instructive and helpful.

Common-Sense Treatment of the Defective Child. By MABEL ANDERSON, A.R.San.I. London Scientific Press, Southampton Street, Strand.

IN her short preface to this little brochure the authoress explains that her object is not to deal with cases of insanity, but merely to afford to "lay men and women" some practical hints on the management and treatment of feeble-minded children, as derived from an experience of more than twenty years in not a few leading institutions devoted to such work. The booklet contains much useful information.

The Medical Inspection of School Children. A Series of Lectures delivered at the West London Post-Graduate College. Pp. 62. London: "The Medical Offices." Price 1s. Paper covers.

THIS book includes lectures by Dr. Saunders on "The General Scheme of Inspection;" by Dr. Abraham on "Examination in Skin Disease;" Dr. Scott on "Examination of the Eyes;" Dr. Davis on "Examination of the Ear, Nose and Throat;" and Mr. Williams on "Examination of the Teeth." The lectures may be commended to those who are interested in the medical inspection of school children. A remark of Dr. Scott's seems to call for some elucidation. He says: "Blackboards, when not in use, should be so arranged as to present a light-coloured surface. This increases the illumination of the room by 50 per cent." Does Dr. Scott really mean this?

EDINBURGH MEDICAL JOURNAL.

EDITORIAL NOTES AND NEWS.

The late Principal Marshall Lang.

ABERDEEN University and city unite in deeply mourning the loss of Principal Lang, whose warm heart, broad mind, and never-failing tact won for him the affection and respect of all who came in contact with him officially and otherwise. Among his predecessors have been men of great learning, even of genius, whose names have been familiar over more than one continent, but of none can it be so truthfully said that from first to last their period of office has been so free from acrimony or has left so uniformly pleasant memories. The late Principal came at a most anxious time in the history of the University, when above all things catholicity, foresight, and kindly worldly wisdom were necessary in the position which he occupied, if shipwreck were to be avoided, and Dr. Lang supplied all these requirements in fullest measure.

It is, perhaps, as yet too early to express opinions as to who shall follow him; locally, however, there seems to be very little doubt on the point, and, after all, probably local opinion when so definite, as in this case, may be considered as a tolerably safe guide.

General Medical Council.

IT is not often that a fresh session of the Council begins with the same membership with which the last closed, and the 89th session which opened on 25th May was no exception. The Council had to mourn the loss of Dr. Lindsay Steven, while the state of their health had compelled the resignations of Dr. Pye Smith and Professor Young. The Glasgow faculty sent their visitor (Dr. D. N. Knox) in place of Dr. Steven, while Dr. Pye Smith is succeeded by Dr. F. Taylor. The University of Manchester has not yet appointed a successor to Professor Young.

As is customary the proceedings opened with the president's address, and Sir Donald MacAlister is peculiarly successful in giving in a few well-chosen words a succinct account of what has occurred since the last meeting of the Council, and a brief forecast of the business coming before the Council, along with just a delicate suggestion as to how he thinks the council should deal with the matters coming before it.

At its meeting in November the Council requested the Privy Council to appoint a Royal Commission to enquire into the evil effects produced by the unrestricted practice of medicine and surgery by unqualified persons. The Lord President has decided to make preliminary enquiries through the Local Government Board, and circulars asking for information have already been issued.

The Colonial Office sent on to the Council a copy of the New Zealand *Quackery Prevention Act*, to which we drew attention some months ago, and the Executive Committee, in acknowledging its receipt, tactfully said that they would welcome similar legislation applicable to other parts of the British Empire.

The question of the administration of anæsthetics is assuming increasing importance. Nearly all the licensing bodies have now made provision for instruction in this subject being compulsory, but the Bills before Parliament, both of which contemplate the restriction of the administration of anæsthetics to registered medical practitioners, will probably require the further consideration of the Council.

Since the last general election of direct representatives, Dr. Langley Browne has had on the programme a motion for the addition of a fourth representative for England. At each session, owing to the pressure of other business, he has courteously—and tactfully—withdrawn the motion, and on Tuesday he had his reward, for the Council, recognising the fairness of his argument, agreed to recommend the Privy Council to make the addition. In order not to put the Council to unnecessary expense, it was agreed that the new member should not be elected until the next general election. There was a strong feeling that it would be much more satisfactory if, for the purpose of the election, England and Wales could be divided into four approximately equal districts, but it seems that this would require a special Act of Parliament.

The last matter requiring the consideration of the Council was the proposed Charter of the British Medical Association, which had been sent by the Lord President with a request for observations. We shall, however, defer dealing with this question till next month.

Dr. Angus Fraser.

AFTER thirty-eight years of clinical teaching in the Aberdeen Royal Infirmary, the Senior Physician, Dr. Angus Fraser, has retired from active service, although his name will still be retained in the list of the staff as Consulting Physician. Generation after generation of students has gone forth from his wards to testify to the admirable instruction there received from an unusually capable clinician, keenly interested in the most recent developments in chemico-biology, physiology and pathology, and able to convey the results of his researches to his pupils in a lucid and striking manner.

Not merely will the presence of the genial teacher be missed from the wards where he so long held sway, but the capable administrator whose counsels were so valued in all times of difficulty and perplexity will not be readily replaced. Dr. Fraser's numerous friends, professional and lay, will be glad to hear that his health is steadily improving, and that there is every reason to hope that the doyen of the Aberdeen Medical School will go out and in amongst us for many years to come.

Uterine Cancer.

We have been requested by Dr. M'Cann to draw the attention of our readers to the appeal issued by a special committee of the British Medical Association, of which he is chairman. As the full text of the appeal appears in the weekly medical journals, we only reprint the points to which special attention is directed. But we cordially commend the whole to the consideration of all. It is the experience of all operating surgeons that few operations for cancer are so successful as that of early hysterectomy for carcinoma, and it is the lament of all that too often they only see the cases when it is too late to operate.

1. Cancer of the uterus is at first a local disease.
2. Cancer of the uterus is often a curable disease.
3. Operation is the only satisfactory method of treatment.
4. The earlier the disease is recognised the more hopeful are the prospects of treatment.
5. The risk of operation in early cases is slight, and the chance of permanent cure is good.
6. The recognition of early cancer is not usually difficult, and the disease should not be overlooked by the medical attendant.
7. A medical practitioner who fails to make a physical examination of a patient exhibiting any of the symptoms of uterine cancer incurs grave responsibility.
8. Treatment of symptoms without a physical examination is unjustifiable.
9. Early cancerous ulcers should not be treated with caustic; their appearance becomes masked, and valuable time is lost.
10. It is an error to wait and observe in order to arrive at a diagnosis.
11. In doubtful cases a diagnosis must and can be made in a few days.
12. To examine, to diagnose, and then to treat, should be the rule in all cases.

Edinburgh School Board: the Medical Officer's Report.

The Education (Scotland) Act, 1908, makes provision for the medical inspection of school children in this country. The first step towards putting these provisions into force has been taken by the Scotch

Education Department, which has called upon the five most populous burghs—Edinburgh, Glasgow, Aberdeen, Dundee and Leith—to prepare, for the approval of the Department, a scheme of medical inspection relative to all the children of school age within their districts. In the preparing of such schemes it is obvious that the experience which has been gained by the few existing School Board medical officers will prove of great value. The present report of the medical officer to the Edinburgh School Board (for the year 1907-8) illustrates this clearly enough, and, indeed, Dr. Meikle expressly states that he has tried to arrange his work so that it might assist future developments, which were obviously likely to occur before long. One medical officer may not be able to do a great deal in such a large school community as that of Edinburgh, but the periodical visit of a school doctor certainly helps to awaken the teachers' interest in the physical side of the pupils' development, and such interest is a good step towards acknowledgment of responsibility.

A few points in Dr. Meikle's report may be referred to *seriatim*—

Ventilation of Schools.—The ventilation of the Edinburgh schools is satisfactory on the whole. Dr. Meikle does not enter upon any discussion of the relative value of the various systems of ventilation which are in use, but his approving remark, that "the majority of teachers believe in open windows," seems to indicate that he is not in entire agreement with Dr. Kerr's dictum that natural ventilation is not ventilation at all.

Disinfection of Schools.—Each school is now provided with a spray pump, and disinfectant is freely supplied. Not only is disinfection of class-rooms carried out upon the occurrence of infectious disease, but routine disinfection of cloak-rooms, desks, offices, &c., is insisted on.

The Special School.—At Willowbrae 78 children were in attendance last year—39 physically and 39 mentally defective. Most of these children improved greatly in health, and many of the mentally defective made marked progress in school. A number of the physically defective had to return to hospital for further treatment. About 65 of these children are conveyed to school by ambulance daily.

No heart cases are mentioned as attending Willowbrae School. In London, children suffering from organic heart disease which would be liable to be aggravated by attendance at an ordinary day school are regarded as "cripples," and are taken daily by ambulance to a school for the physically defective. The practice is obviously a good one, but care has to be taken to prevent the children over-exerting themselves out of school hours.

Wednesday Afternoon Cases.—Wednesday afternoon is reserved for cases brought up for examination by the chief attendance officer. During the last year there were 842 of these cases. No less than 32 per cent. of these were suffering from skin disease—80 from scabies,

75 from ringworm, 11 from favus, and 105 from broken-out heads and other conditions.

Medical Inspection of Pupils.—Medical inspection of a systematic kind was limited to the newly enrolled "infants." Of these 3548 were examined—1821 boys and 1727 girls. But in addition to this, nearly all the children in the schools were weighed and measured during the year, this work being carried out by the teachers.

It is found that at nearly all ages the Edinburgh children are below the Anthropometric Committee's standard in both height and weight, and at some ages the difference is considerable. At 10 years of age, for example, the average Edinburgh boy is 5·65 lbs., and at 11 years of age he is 5·78 lbs., below the standard.

In some of the schools the condition of the children as regards cleanliness of body and clothing is unsatisfactory, the proportion marked "bad" in this respect rising as high as 23 per cent. Pediculosis is very common, and in some of the poorest schools as many as 68·7 per cent. of the girls had nits in the hair. The fact that the percentage of boys so affected was not more that 5·9 in the same schools raises the obvious suggestion that a great improvement would be effected if the fashion could be introduced of girls wearing their hair as short as boys.

Valvular heart disease was found in 10 cases. In some of these cases the existence of the affection was already known, but in others it was detected for the first time at the school examination. Functional affections were present in 58 cases. These included conditions due to anæmia, and all conditions of irregular heart action.

Bronchitis was frequently detected, especially in schools examined in winter and spring. In the poorest schools over 9 per cent. of the children were so affected. Phthisis, on the other hand, was detected in only 2 cases.

Dental caries was very prevalent in these young children, who had an average of over 6 decayed teeth. Abscesses in the gums, ulcers, and projecting roots were quite common. Many of these children were markedly anæmic.

Vision was not tested in the infants, but notices were sent to the parents of 1600 older children, reporting that their vision was defective. As a result of this 454 children now have glasses, but in many cases no attention was paid to the notice.

Otorrhœa was present in as many as 4·1 per cent. of the children examined in the poorest schools. In many of these cases little or no treatment was being carried out.

Slight enlargement of tonsils was very common, and a considerable proportion of the children were mouth breathers.

Recommendations.—The recommendations of the medical officer are briefly as follows:—

1. More strict inspection for and more stringent methods of dealing with dirty and verminous children.

2. The following up of cases and home visits to see that any treatment recommended is carried out.

3. Schools for special skin diseases, especially favus and ringworm.

4. Relaxation of quarantine regulations for certain minor infectious diseases.

5. The inclusion of the pupil's infectious disease history upon the school entrance form.

To aid the carrying out of the first two recommendations Dr. Meikle advises the appointment of a school nurse, by which he doubtless means nurses.

It is obvious that Dr. Meikle has done a great deal of useful work during the year. His report requires little comment, but two points occur to us in connection with his recommendations. The first is that the work suggested for the school nurse would require the services, not of one nurse but of a staff; and before the School Board takes the serious step of appointing for its own purposes a staff of nurses, it would be well to consider whether arrangements could not be made for having the work carried out by the existing Victoria Jubilee Institution, even if the staff of that institution had to be increased for the purpose.

The second point refers to the following up of cases. Every hospital physician knows that many patients fail to benefit by their advice because they never carry out perseveringly or intelligently the treatment recommended. Many cases who are advised to return after a week's interval fail to report themselves again, but no inquiry is made as to whether they have died, recovered, or gone elsewhere. In the case of school children suffering from ringworm, otorrhœa, blepharitis, and many other conditions which interfere with school attendance, visits to hospital or dispensary are apt to be paid only when the school attendance officer's attentions become too pressing. The result is, that a great deal of the physician's advice is wasted, and his time thrown away. One way out of this difficulty which has been suggested is the establishment of school clinics at which children unfit to attend school might be compelled to attend regularly for treatment. To the establishment of such cliniques there are weighty objections, but they will probably prove a necessity in the near future, unless some means of co-operation between the school medical officers and the out-patient departments can be devised. It is time those engaged in out-patient practice were considering this question.

Dr. Francis D. Boyd has been appointed Examiner in Pharmacology, Therapeutics, &c., for the Indian Medical Service.

A HISTORIC INSTANCE OF THE ADAMS-STOKES SYNDROME DUE TO HEART-BLOCK.

By G. A. GIBSON, M.D., and W. T. RITCHIE, M.D.

(*Continued from page* 329.[1])

HAVING narrated the general course of the symptoms presented by Sir William Gairdner, we have now to enter upon the results of physical investigation and instrumental examination, carried out for the most part after the development of the permanent infrequency of the pulse.

The complexion, although pale—as it had indeed been throughout his life—was healthy; in fact, during the whole of his illness there was no alteration in colour except during the worst of the attacks, when, as has already been mentioned, there was sometimes a degree of cyanosis. The general state of nutrition was excellent, and there was no trace of emaciation; the muscles retained their tone wonderfully well, considering the small amount of exercise which could be allowed; the skin remained fresh and smooth.

The tongue, as a general rule, was clean, and, apart from some flatulence, there was no complaint in regard to the alimentary system. The stomach was only moderately dilated, but the colon usually showed very considerable distension. Constipation had been a trouble throughout most of his life, and it required to be carefully guarded against during his later years. Apart from the distension of the colon, physical examination of the abdomen revealed no abnormality, and the liver was of the usual size. Examination of the blood showed no departure from normal conditions. There was no trouble in respect of the renal functions, and from first to last there was neither disturbance in the proportions of the normal constituents nor the slightest trace of albumin or of any other abnormal constituent. Careful examination of the lungs showed slight dulness on percussion over the apices, both in the supraclavicular and supraspinous regions; this was attended by a harsh respiratory murmur, scarcely, however, amounting to bronchial breathing, and accompanied by a moderate degree of accentuation of the vocal resonance. The nervous

[1] The April number of the *Edinburgh Medical Journal*

system, carefully examined, scarcely yielded a trace of any departure from the normal standard. There were rarely any subjective sensory disturbances, and sensibility, tested objectively, was intact. Sir William had suffered for some years from detachment of the retina, and the sight was therefore considerably impaired. Hearing was somewhat dull, but up to the date of resignation he was able to auscultate perfectly, the degree of deafness which was present being due to changes in the media, and not in the nervous mechanism. The organic and cutaneous reflexes were intact, while the muscle and tendon responses were lively, but not exaggerated; the muscular system, although necessarily far from strong, was in no respect abnormal.

No vasomotor or visceral symptoms were present, excepting that during the minor attacks the face manifested a higher degree of pallor than usual, while the graver paroxysms led to some cyanosis.

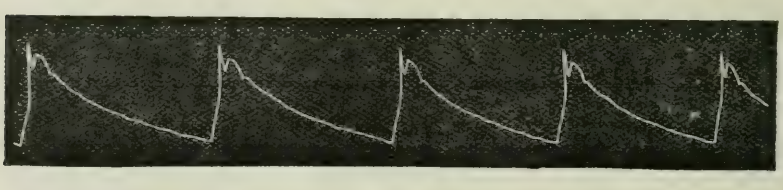


Fig. 1.—Tracing from the radial artery.

Throughout his life, as he indeed mentions in his own description of his symptoms, there was a tendency to paleness. The innervation of the viscera was in no sense interfered with. We were inclined to regard a temporary digestive disturbance as sometimes the cause of the attacks of the Adams-Stokes syndrome, which, as is now well recognised, is sometimes brought about by reflex stimulation through the vagus nerve. The intellectual processes remained to the last day of life perfectly unimpaired, and to the very end Sir William Gairdner manifested wide interest in, and acute appreciation of, every modern movement, whether scientific, literary or political.

The arteries within reach of examination by palpation were slightly thickened, but not hard; they were compressible quite easily, and showed no tendency to tortuosity. The vessels gave to the finger the sense of a large, well-sustained impulse, with comparative emptiness between the pulsations. The rate of the pulse during the last four years of life varied between 24 and 32 per minute (Fig. 1). The rhythm was not absolutely

regular, as numerous tracings showed slight variations in the length of the systole. These, however, were by no means striking. The arterial pressure, which was for the first time in such conditions carefully studied, revealed features of the greatest interest; the systolic pressure was always between 200 and 300 mm. Hg., usually between 210 and 270; the diastolic pressure only varied between 75 and 85. Unfortunately, the sphygmomanometer devised by one of us[1] was not sufficiently developed during the patient's lifetime to enable us to obtain records, but a tracing taken from the patient with Erlanger's instrument (Fig. 2) shows a systolic pressure of 230 and a diastolic of 75. In a previous communication upon heart-block[2] we have discussed these interesting facts of arterial pressure, and have attributed the enormous difference between systolic and diastolic pressure to

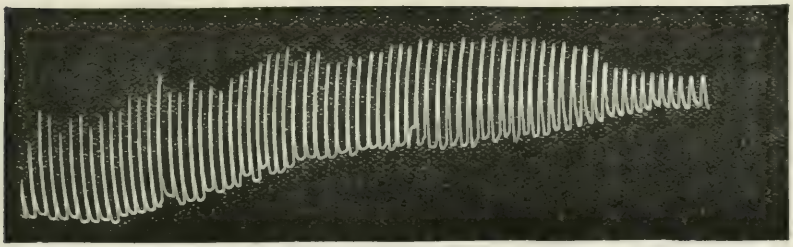


Fig. 2.—Tracing taken with Erlanger's sphygmomanometer. The systolic pressure is 280, the diastolic 75 mm. Hg.

the long interval elapsing between the contractions of the ventricles.

On inspection of the cervical region faint movements were obvious in the external jugular vein, and vigorous pulsation was seen in the carotid arteries. It was perfectly clear that two or three flickering oscillations took place in the vein between two consecutive arterial pulsations. The apex beat was vigorous but somewhat diffuse, its maximum intensity being just outside the mammary line. No abnormal pulsations could be seen in the precordia, and, on palpation, the powerful apex beat was found to be accompanied by no thrill, and no adventitious movements were communicated to the hand. On percussion, the right border of the heart, at the level of the fourth costal cartilage, was 2 inches from midsternum; the left border was just outside the mammary line

[1] *Quarterly Journal of Medicine*, 1907, vol. i. p. 103.
[2] *The Practitioner*, 1907, vol. lxxviii. p. 589.

4¼ inches from midsternum. The first sound over the whole precordia was replaced by a loud, high-pitched, blowing murmur; its maximum intensity was found to be at the apex, whence it was propagated most distinctly to the axilla and towards the angle of the scapula, as well as, although less distinctly, throughout the whole chest. The second sound was loud and ringing; its point of maximum intensity was about the aortic cartilage and the right border of the manubrium sterni. In that region there was a slight alteration of the character of the systolic murmur, which was found to be conveyed to the carotid arteries; it was therefore assumed that an aortic systolic murmur accompanied that produced at the mitral and tricuspid orifices. The condition was undoubtedly that of a senile heart with escape at the great venous orifices from stretching of the muscular sphincters, while it seemed certain that there was, in addition, some dilatation of the ascending portion of the aorta, revealed by the systolic murmur and accentuated second sound.

Another phenomenon revealed by auscultation was of the greatest interest. Following every second sound, and therefore preceding every systolic murmur, there could always be heard perfectly distinct, if not loud, sounds, usually two in number; these were most distinctly audible along the right side of the sternum and towards the axilla, where they became somewhat less distinct. On passing still further back, towards the angle of the right scapula, these sounds again became much more evident; they could be heard at the apex of the heart and along the left edge of the sternum, but they were not so evident, and it was difficult to hear them further back over the left side of the chest. These sounds were assumed to be caused by the contraction of the auricles, and on auscultating with the binaural stethoscope, they were found to precede the flickering movements of the jugular veins. These auscultatory phenomena produced by the auricles have been fully discussed by one of us in previous works,[1] and by both of us in a subsequent communication.[2] The examination of the cardiac movements by fluoroscopy, which was first introduced by one of us,[3] was never carried out in the case of Sir William Gairdner, as it was felt that in his condition of health the inevitable disturbance produced by this

[1] *The Nervous Affections of the Heart*, 1904, p. 61; and *Edinburgh Medical Journal*, 1905, vol. xviii., N. S., p. 9.

[2] *The Practitioner*, 1907, vol. lxxviii. p. 589.

[3] *Proceedings of the Royal Society of Edinburgh*, 1905, vol. xxv. p. 1085.

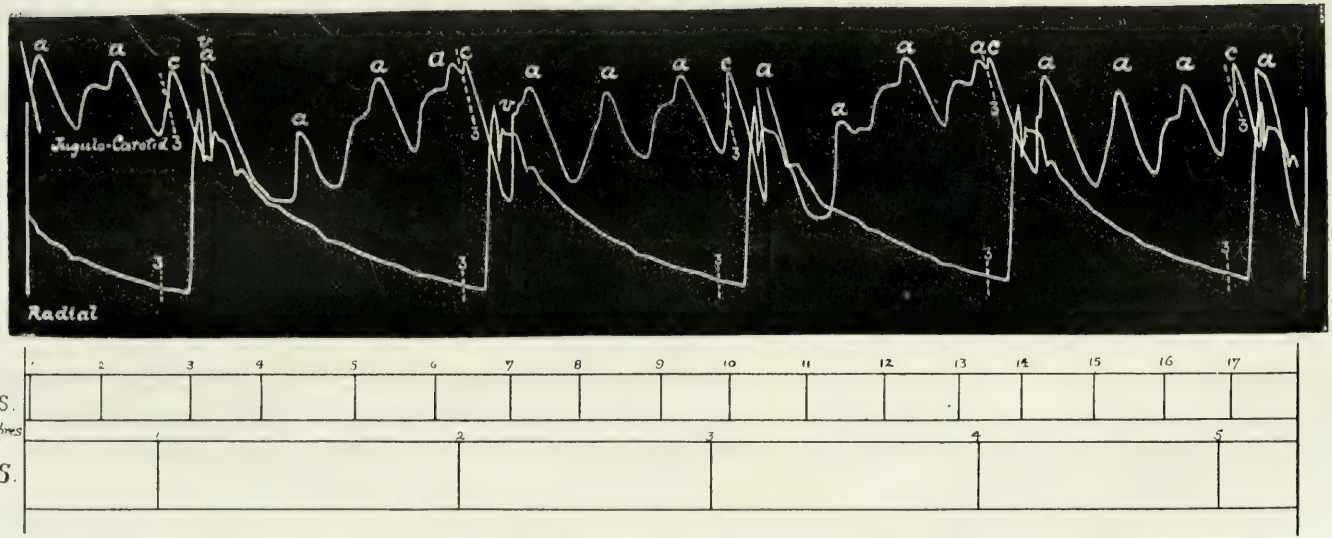


Plate I.—Simultaneous tracings of the jugulo-carotid and radial pulsations. The diagram, constructed from the events recorded in the tracings, shows that no stimulus passes along the *a-v* fibres to the ventricles, but that there is complete dissociation of the ventricular rhythm (*V. S.*) from the auricular (*A. S.*).

method of examination was not advisable, and this additional aid to diagnosis was not therefore adopted.

Graphic records of the arterial and venous pulsations, and of the apex beat of the heart, however, were obtained from time to time, and they afforded confirmatory proof of there being complete dissociation of rhythm of the auricles and ventricles, or, in other words, of complete auriculo-ventricular heart-block.

The tracings reproduced in Plate I. are the enlarged records of the radial and jugulo-carotid pulsations taken simultaneously in 1904 with Mackenzie's clinical polygraph. Below the tracings we have placed a diagrammatic interpretation of the events recorded. In Plates II. and III. there are reproduced the tracings, somewhat reduced in size, that were taken in 1906 by means of the Knoll-Hering polygraph; the time is recorded by Jaquet's chronograph in fifths of seconds, and the accompanying diagrams are constructed to illustrate the events recorded in the tracings.

Each auricular wave in the phlebograms is indicated, in the usual manner, by the letter *a*, whilst *c* is the carotid elevation, and *v* the ventricular wave. In the *tracings*, the numeral 1 marks the time of commencement of the auricular wave; 3 indicates the appearance of the carotid wave; and 4 the moment at which the radial pulse wave appears. In the subjacent *diagrams*, the auricular beats, and likewise the ventricular, are numbered consecutively.

The tracings in Plate I. show that the auricular rate is more than thrice as frequent as the ventricular. In Plate II., where the time record is available, we find that the rate of auricular contraction is 80 per minute, while that of the ventricular beats is only 24·4 per minute. In Plate III. the auricular rate is 82·3, and the ventricular 24·7 per minute.

The question naturally arises whether there was, as we believe, complete auriculo-ventricular dissociation, or whether the ventricles responded not to each, but to every third or fourth, stimulus from the sinus. We know that such failure of the ventricles to respond to each stimulus from the sinus may be due to one or other of three causes—defective contractility of the ventricular musculature, depression of ventricular excitability, and lowered conductivity of the tissues of the auriculo-ventricular bundle. Further, we know that the conductivity of this bundle may be impaired either by an incomplete organic lesion of the bundle itself, or by negative dromotropic influence of vagus origin. Does any one of these three alternatives provide a wholly satis-

factory explanation of the facts recorded in the tracings, or are we forced to conclude that there was complete auriculo-ventricular heart-block due to an organic lesion of the *a-v* bundle?

After a most careful examination of all the tracings, we fail to detect any evidence of defective contractility on the part of the ventricular musculature. No indication of the alternating pulse was at any time observed. Nor do we find any proof that the infrequency of the ventricular beats and arterial pulse is the expression of a lowered excitability of the ventricular musculature. It is true that at the first glance the tracings in Plate I. suggest one of those rare and exceptional instances where the ventricles respond only to every third or fourth stimulus, and yet where the *a-c* interval is so short as to preclude the possibility of there being any defect in conductivity, and where we are consequently driven to suppose that the phenomena can only be due to a lowering of ventricular excitability. But a closer examination of the tracings, and particularly of those in Plates II. and III., shows how erroneous such an inference is. It is evident that we are not dealing with a 3 : 1 or 4 : 1 rhythm. On the contrary, the auricular and ventricular rhythms are wholly independent of each other, as is clearly demonstrated in the schematic diagrams accompanying the tracings.

We need, therefore, hardly consider in further detail the only other alternative explanation, namely, a partial auriculo-ventricular heart-block, with a 3 : 1 rhythm. It is sufficient to point to the tracings reproduced in Plates II. and III., which show the auricles to be beating rhythmically, and likewise the ventricles, but each with an independent rhythm and at a different rate, so that the ventricular systoles follow the auricular at varying intervals, sometimes preceding, at others coinciding with, the latter. The beating of the auricle and ventricle simultaneously is graphically recorded in the case of the fourth ventricular beat (pulse wave) and the eleventh auricular beat in Plate II., and of the seventh ventricular and twenty-first auricular beats in Plate III. In each instance the auricular and carotid waves coincide, and, for reasons which are sufficiently obvious and equally well known, there is in each instance one large wave ($a+c$) in the jugular vein. As the tracings revealed a condition of complete, not partial, auriculo-ventricular heart-block, and as the condition persisted for some years, we concluded that, while negative dromotropic influence of vagus origin might well have been the exciting cause of the syncopal attacks in the earlier stages of the patient's illness before

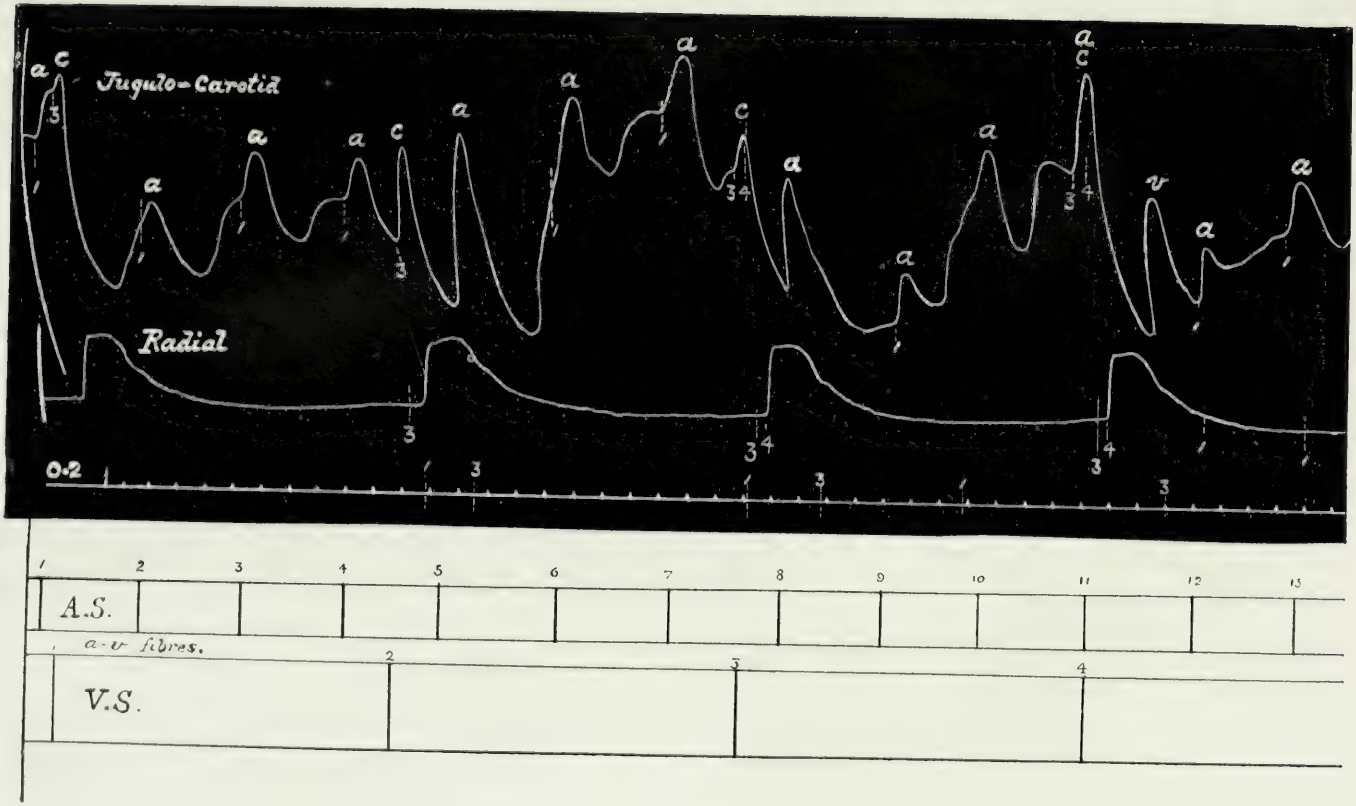


PLATE II.—Complete heart-block.

the block became permanently complete, there was an organic lesion of the auriculo-ventricular bundle, leading eventually to complete failure on the part of the bundle to conduct the physiological stimuli to the ventricles.

As the tracings show complete auriculo-ventricular dissociation, it is to be expected that, just as the auricular and carotid waves sometimes coincide, so will the auricular and ventricular waves occasionally occur simultaneously, and we find it so. At times the ventricular wave appears quite distinct and apart from any other wave—for example, the ventricular wave between the eleventh and twelfth auricular waves in Plate II., or that between the twenty-first and twenty-second auricular waves in Plate III. But at other times the ventricular wave does coincide with an auricular one. The third auricular wave in Plate I. and the

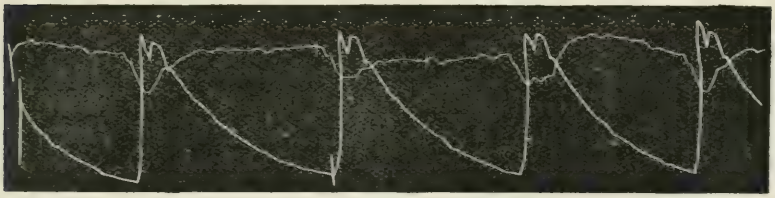


Fig. 3.—Tracings from the apex beat and radial pulse.

eighteenth auricular wave in Plate III. may be referred to in illustration of this fact.

As the occurrence of a ventricular wave indicates an antecedent contraction of the right ventricle, the tracings prove that the two ventricles beat synchronously, rhythmically, and at the same infrequent rate. The records of the movements of the left auricle are less clear than those of the right. We have elsewhere [1] shown records of heart-block in which large positive waves, produced by the systolic movements of the left auricle, appeared in the apical tracings. But even if we were unaware of the fact that when there is a condition of complete auriculo-ventricular heart-block the two auricles always continue to beat in unison, we should find, in Fig. 3, sufficient evidence that in the present instance the left auricle was beating at a rate and with a rhythm wholly independent of the left ventricle. In the upper tracing of Fig. 3, taken from the apex beat, there are a number of small

[1] *Proceedings of the Royal Society of Edinburgh*, 1905, vol. xxv. p. 1085; *British Medical Journal*, 1906, vol. ii. p. 1113.

positive waves appearing at a rate about three times as frequent as that of the left ventricle, as revealed by the systolic depression in the apical tracing or by the radial sphygmogram. Further, these small positive waves have a rhythm independent of that of the left ventricle, and thus they can owe their origin only to the beats of the left auricle. We have thus graphic evidence of the two auricles beating together at a rate of about 80 per minute, and likewise of the ventricles beating synchronously about 24 times per minute, and, further, of there being complete dissociation of the auriculo-ventricular rhythm.

The only other point in the tracings to which we would refer very briefly are the waves, indicated by the letter *s*, in the jugulo-carotid tracing of Plate III. We regard these waves, which must not be confounded with the *h* wave of Hirschfelder[1] and the *b* wave of A. G. Gibson,[2] as due to the increased pressure in the superior vena cava and jugular vein induced by the rhythmical contraction of the muscle fibres in the wall of the former vessel. This explanation of the wave we have already advanced in a former paper.[3] During the past two years our histological investigations have demonstrated that there is a considerable amount of striated cardiac muscle in the wall of the superior vena cava, extending as far up the vessel as the line of reflexion of the pericardium. We believe that under certain pathological conditions this muscle tissue may undergo such a degree of hypertrophy that its rhythmical contraction may be manifested, as in the case now recorded, by a positive wave preceding the auricular wave in graphic records taken from the jugular pulsations.

From 6th March 1903, when the last seizure, with one exception, occurred, until the end of his life, this state of complete heart-block persisted. In the spring of 1907 Sir William Gairdner resolved to leave Edinburgh and live in the neighbouring country, and about mid-summer he and his family entered upon their new house at Colinton. Shortly afterwards the end came with great suddenness, but was most characteristic in its peaceful serenity. On 28th June 1907 the annual dinner of the Royal Infirmary Residents' Club was held in Edinburgh, and amongst those present was Dr. Yellowlees of Glasgow. Early in the afternoon, Dr. Yellowlees, who had come from Glasgow in advance of the hour of dinner in order to call upon Sir William, spent some

[1] *Johns Hopkins Hospital Bulletin*, 1907, vol. xviii. p. 265.
[2] *The Lancet*, 1907, vol. ii. p. 1380.
[3] *The Practitioner*, 1907, vol. lxxviii. p. 589.

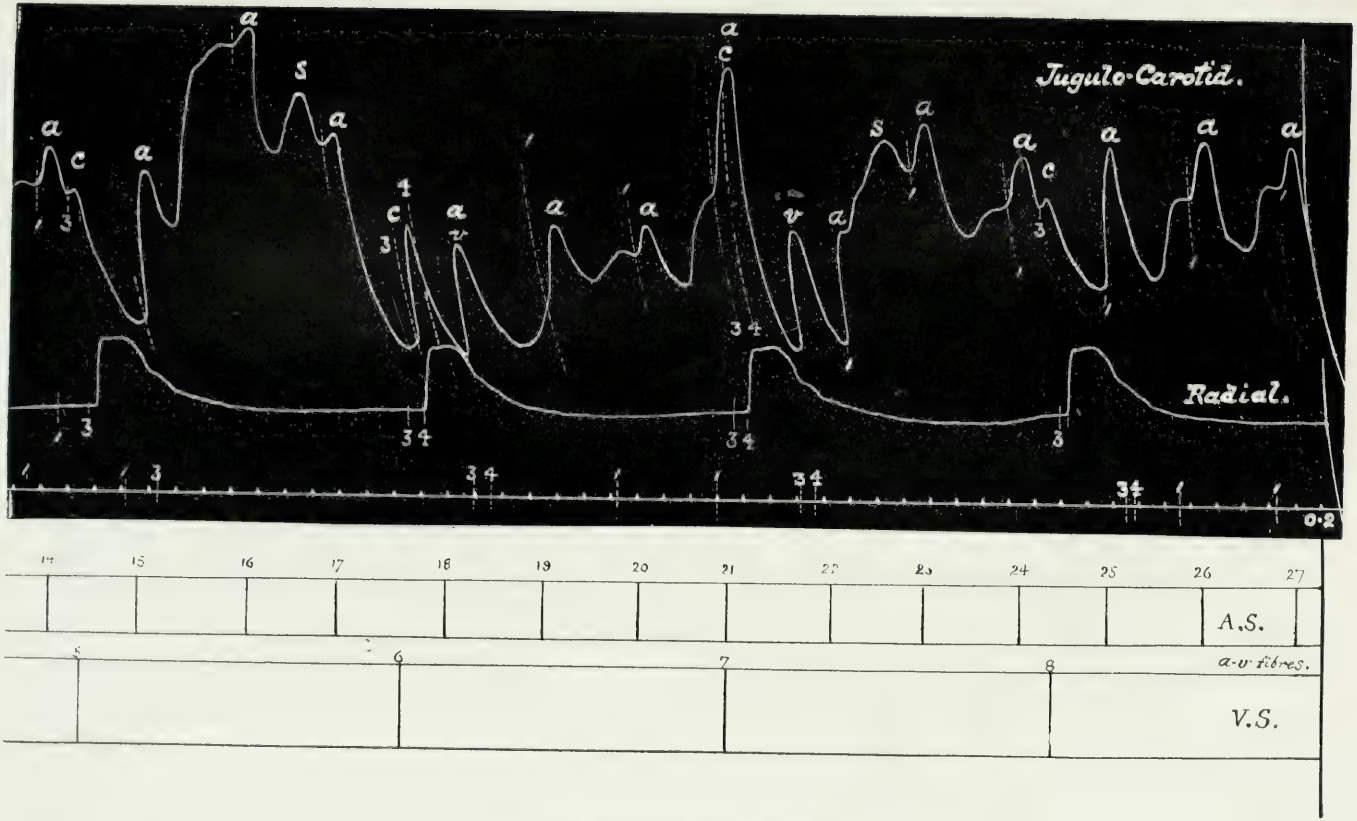


PLATE III. Complete heart-block.

time with him at Colinton. Sir William had a long conversation with Dr. Yellowlees, and sent a friendly greeting by him to the Club; he afterwards accompanied him to the door, and then lay down upon his couch to read. One of the household looked in upon him, and at his request brought him another book. In less than an hour he was found to have passed away. In accordance with his desire a post-mortem examination was conducted the day following his death, and to the results of this we must now turn.

We do not propose to describe in any elaborate detail the condition of all the viscera as revealed at the examination, but we shall confine our observations mainly to the state of the heart, It will be sufficient if we note that the body was well nourished, and that no œdema or special degree of cyanosis was observed. The apices of the lungs presented small old fibrous cicatrices, and there were slight indications of arterio-sclerotic disease in the kidneys. The pericardium was perfectly healthy.

The heart was found to be greatly enlarged, the maximal external measurements of the organ being as follows:—

In the long axis	17 cm.
Transversely	12 cm.
Antero-posteriorly	11 cm.
Circumference, 2 cm. below the auriculo-ventricular groove . . .	37·5 cm.
Surface of the ventricles along the line of the septum	25 cm.

The Right Auricle.—In the epicardium on the right side there were numerous yellow (fatty) streaks. Measured in the long axis of the heart the septal wall was 70 mm. long, whilst the lateral wall of the cavity was 105 mm. The orifices of the superior and inferior venæ cavæ, as well as those vessels themselves, were dilated. The coronary sinus was dilated; the valve of Thebesius guarding the orifice was well marked, thin, but not fenestrated. The endocardium lining the auricular cavity was smooth, but somewhat thickened. The fossa ovalis was closed. There was no other noteworthy feature regarding the septal wall of the auricle that could be recognised either by inspection or palpation. The tænia terminalis was hypertrophied, while the pectinate muscles were also hypertrophied. The dilatation of the auricle was manifested by the wide gaps between the pectinate muscles, allowing the endocardium and epicardium to come into contact with each other.

The Right Ventricle.—There was a moderate increase of the

epicardial fat over the right ventricle. The tricuspid orifice measured 14·5 cm. in circumference; the anterior and posterior papillary muscles were elongated and hypertrophied, and the chordæ tendineæ were slightly thickened but not shortened. The septal papillary muscles were represented by two small bundles, each 2 mm. in diameter, and some of the chordæ tendineæ passing to the septal cusp sprang directly from the septum. In the marginal cusp of the valve there were some irregular patches of fibrous thickening, but there was no calcareous change. The other two cusps were even less affected, being very little thickened and not calcareous.

The septal wall of the right ventricular cavity, measured from the auriculo-ventricular ring to the apex, was 90 mm., whilst the lateral wall measured 110 mm. The ventricular cavity was thus dilated. The columnæ carneæ were massive and thick. At the apex, however, the wall was not more than one-third of the normal thickness. The endocardium presented numerous whitish streaks and patches which, when examined microscopically, were found to be fibrous thickenings of the superficial layers of the endocardium. Some subendocardial fatty patches were also observed. These fibrous and fatty patches were all of small size, and were most abundant on the columnæ carneæ. The septum ventriculorum was carefully examined. Its muscular portion was hypertrophied throughout; the pars membranacea septi was large and uniformly thickened to a slight degree. No swelling, tumour, cicatrix, calcareous deposit or other local lesion was detected, on naked-eye examination, in any part of the septum.

The pulmonary orifice measured 9·8 cm. in circumference; the cusps were all healthy. The pulmonary vessel was somewhat dilated.

The Left Auricle.—There were four pulmonary veins, two on each side; none of them were more than slightly dilated. The muscular wall of the auricle was hypertrophied; the endocardium was appreciably thickened throughout. The auricular cavity was enlarged, measuring, along its lateral wall, 90 mm., and along its septal wall 70 mm., the measurements being taken in the long axis of the heart. The auricular appendix was distended at its commencement, but in its wall only the pectinate muscles were hypertrophied. There were no thrombi in the auricle or in its appendix.

The Left Ventricle.—The mitral orifice measured 11·5 cm. in circumference. The anterior, or aortic, cusp measured 3·5 cm. in

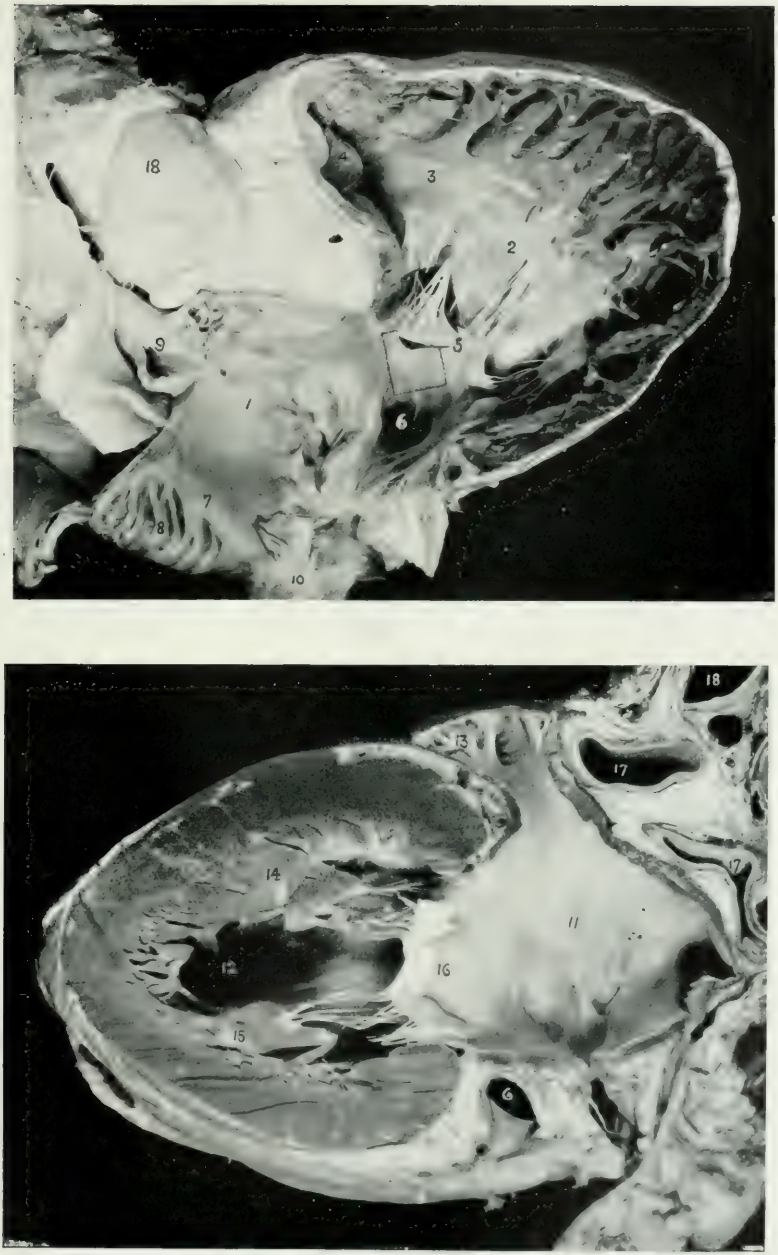


PLATE IV. FIGS. 1 and 2.

1. Septal wall of right auricle. 2. Septal wall of right ventricle. 3. Infundibulum. 4. Pulmonary valve. 5. Tricuspid valve. 6. Mouth of the coronary sinus. 7. Tænia terminalis. 8. Pectinate muscles of right auricle. 9. Superior vena cava. 10. Inferior vena cava. 11. Septal wall of left auricle. 12. Septal wall of left ventricle. 13. Left auricular appendix. 14. Anterior papillary muscle of left ventricle. 15. Posterior papillary muscle of left ventricle. 16. Aortic cusp of mitral valve. 17. Main branch of pulmonary artery. 18. Aorta.

depth, and 5 cm. in width. It was thickened, particularly at its basal part, where it was also of yellowish colour, opaque, and firm. This increased thickness was derived in part from the attachments of the chordæ tendineæ radiating to the back of the valve. On microscopic examination of the basal part of the cusp, numerous fine calcareous deposits were detected. The posterior or marginal segment was also thickened. It was 6·5 cm. wide, and was never more than 1·7 cm. deep.

The chordæ tendineæ attached to the edge of the valve segments measured from 2·4 to 2·6 cm. in length, but those passing to the extreme tip of the papillary muscles averaged only 1·8 mm. in length. All the chordæ tendineæ were thickened, though not markedly so, but none were shortened. The fibrous change extended from the chordæ tendineæ into the tips of the papillary muscles. One of the chordæ passing from the posterior papillary muscle to the right margin of the posterior cusp presented, in its upper half, a club-shaped enlargement 4 mm. thick, which, when incised, was found to be composed of fibrous tissue. Several small pouches projected on the auricular surface of the posterior cusp. A small yellowish-brown opaque nodule, 1 mm. in diameter, which was attached to the auricular surface of the posterior cusp at the junction of its anterior and middle thirds and midway between its base and free margin, was evidently a partially organised vegetation. With this exception, there was no sign of recent endocarditis at any of the valvular orifices of the heart.

The mural endocardium presented patchy thickenings. On some of the columnæ carneæ these thickenings were represented by greyish-white fibrous areas lying with their long axes parallel to those of the columnæ carneæ. Several thin greyish-white fibrous cords passed between adjacent columnæ.

The length of the left ventricular cavity along its septal wall was 95 mm.; along its lateral wall 100 mm. The ventricular wall was, in general, hypertrophied. At the extreme apex the wall was, indeed, only 4 mm. thick, but at the level of the base of the anterior papillary muscle it was 1·7 cm. thick, and at a point 1·5 cm. below the auriculo-ventricular junction the thickness of the wall was 2 cm.

On the cut surface of the ventricular wall numerous pale greyish streaks and patches were observed, indicating fibrous transformation of the myocardium. These patches were most evident in the anterior papillary muscle (see Plate IV. Fig. 2) and in the myocardium in its vicinity. The branches of the coronary arteries which pass downwards and likewise those passing

inwards through the ventricular wall were conspicuous as greyish-white lines. Microscopic examination of portions of the muscular wall of the left ventricle showed that it was, for the most part, wonderfully healthy. There was but little fatty change in the muscle fibres. The fibrous transformation was not widespread, and was mainly confined to those situations in which it was apparent to the unaided eye.

The aortic orifice measured 9·2 cm. in circumference. The cusps and their lunulæ were all thickened, but the cusps were not adherent to one another, nor were they shrunken. The anterior cusp, in addition, presented a calcareous nodule at its base, extending into the cusp, but the calcification did not extend into the adjacent musculature. The left posterior cusp presented two small fibrous projections attached to the corpus Arantii, and in the left half of the cusp near its base there was a calcareous deposit similar to that in the anterior cusp. The right posterior cusp manifested a considerable degree of fibrous thickening over the corpus Arantii and also along the bases of the lunulæ, and in the posterior half of the basal part of this cusp there was some calcareous deposit. The sinuses of Valsalva were all dilated, the anterior and the left posterior sinuses being more markedly distended than the right posterior sinus.

The walls of both coronary arteries and of their branches were markedly atheromatous, with a considerable degree of calcification. These changes were clearly demonstrated by microscopic examination of the vessels and their branches.

The Aorta.—The ascending aorta, 2·5 cm. above the sinuses of Valsalva, measured 9·7 cm. in circumference. Its inner surface showed numerous, small, irregular, flat, yellow patches and streaks of fatty change in the superficial layers of the intima. Further, there were a few small patches of early atheroma. In the aortic arch, and especially where the great vessels are given off, there were several patches of well-marked atheroma. The deeper part of two of these patches consisted of soft pultaceous material, while in a third patch there was a calcareous plate. The intima of the aortic arch also presented several small patches of superficial fatty change.

The innominate artery was slightly dilated in a fusiform manner, and it showed considerable early atheromatous change. The carotid and subclavian arteries presented similar degenerative changes.

We are greatly indebted to Dr. Theodore Shennan for the kind assistance he gave us in examining the heart, and we gladly

express to him our grateful thanks for much invaluable help in obtaining the photo-micrographs which illustrate the salient features of the case.

From the foregoing description of the heart, it is apparent that the organ was hypertrophied; that the coronary arteries were the seat of atheroma; that the mitral and aortic valves were sclerosed and calcareous; and that there was some fibrous transformation of the ventricular musculature. It is further evident that, while on naked-eye examination of the heart the basal portion of the aortic cusp of the mitral valve was markedly indurated, no other gross lesion was detected, either in the auricular or the ventricular septum, which could be satisfactorily regarded as occasioning a loss of structural continuity of the auriculo-ventricular node or bundle.

It became necessary, therefore, to make a microscopic examination of this node and bundle, in order to ascertain whether there was any lesion of the primitive cardiac tissue in these situations, and if so, to determine its nature. At the same time, we proceeded to make a histological study of corresponding portions of healthy adult human hearts in order that we might have a clear conception, not only of the position of the auriculo-ventricular node, and the course, bifurcation and ramifications of the auriculo-ventricular bundle, but also of the microscopic characters of these portions of the primitive cardiac tissue. Four healthy hearts were examined. We removed such a portion of the cardiac septum that the block which was to be investigated contained the pars membranacea septi, the adjacent portions of the muscular septa—both ventricular and auricular—together with the central fibrous body, and the attachments of the septal cusp of the tricuspid valve and of the aortic cusp of the mitral valve. This portion of the cardiac septum was found to contain the auriculo-ventricular node, the bundle, and the first portions of its two main branches. In the case of the first healthy heart the block of tissue was cut in a plane which would be a frontal one were the long axis of the heart vertical. In the case of the remaining three healthy hearts, and also the heart with which we are more particularly concerned, the blocks of tissue were cut in serial sections from above downwards, and in the horizontal plane, supposing the long axis of the heart to be vertical. At the time when we commenced these investigations the only reliable and detailed information regarding the normal anatomy and histology of the auriculo-ventricular node and bundle was that

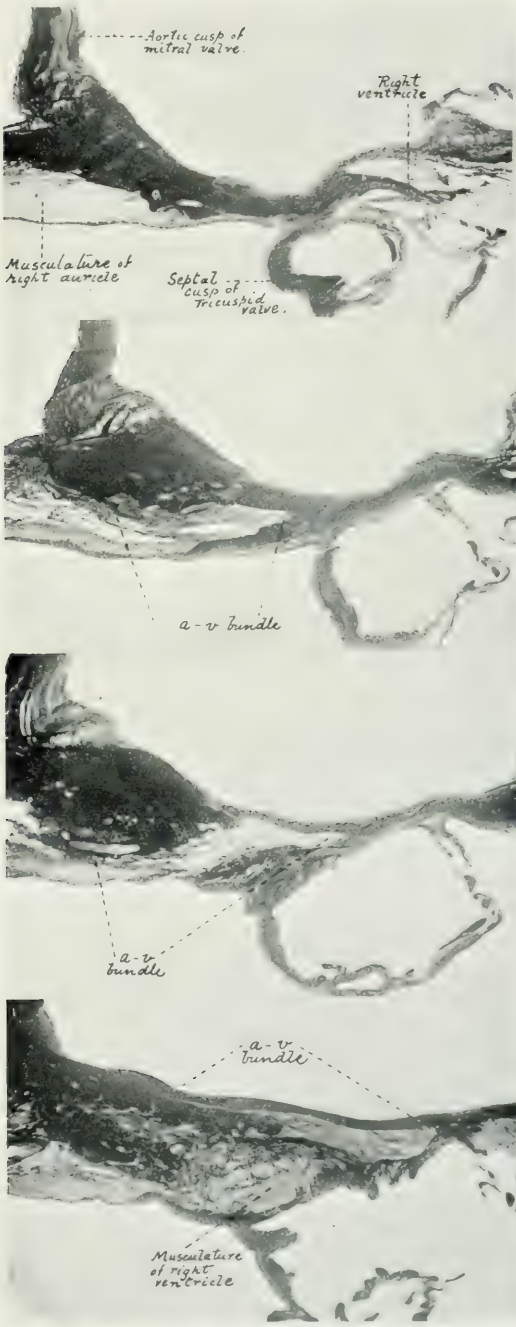
contained in the writings of Tawara[1] and of Keith and Flack.[2] So far as the human heart was concerned, however, Tawara's researches were confined to the fœtal heart and to that of children up to three years of age. When our examination of the five hearts was almost completed, Mönckeberg[3] published his monograph on the auriculo-ventricular bundle, this being the most extensive and elaborate contribution that has yet been made to the study of the bundle in the human heart.

Our own observations of the healthy node and bundle are in full agreement with the descriptions given by Tawara and Mönckeberg. In Plates V. and VI. there are reproduced certain of the serial sections of the third healthy heart that we examined. The sections were cut in the horizontal plane as already described, and were uniformly 0·03 mm. thick. They were stained with Mayer's hæmalum and van Gieson's stain, so that the pink fibrous tissue appears dark in the illustrations, whereas the muscle tissue, being stained yellow, appears paler. In the sections from No. 1 to No. 143 there is, as yet, no evidence of direct continuity between the auricular and the ventricular musculature. In section No. 179, however, we observe a tongue-like mass of vascular muscle tissue (the auriculo-ventricular node and the first part of the *a-v* bundle) projecting forwards from the musculature on the right side of the auricular septum, at a point opposite the attachment of the anterior mitral cusp to the central fibrous body of the heart, and somewhat behind the attachment of the septal cusp of the tricuspid valve. In section No. 203 the bundle is seen passing still further forwards, through the auriculo-ventricular septum, towards the pars membranacea septi, and at the same time passing somewhat to the left side. In other instances we find that the bundle does not pass over to the left, but takes up a central position in the septum, or remains constantly on the right side. In section No. 229, that portion of the bundle which is contained in the section is seen to lie for the most part on the left side of the septum, close to the endocardium. The bundle now contains numerous large blood-vessels. This section also shows that there is a thin branch passing backwards on the left side, subendocardially, and as if it were directed towards the insertion of the

[1] Tawara, *Das Reizleitungssystem des Säugetierherzens*, Jena, 1906.

[2] Keith and Flack, *The Lancet*, 1906, vol. ii. p. 359; *Journal of Anatomy and Physiology*, 1907, vol. xli., third series, vol. ii. p. 172.

[3] Mönckeberg, *Untersuchungen über das Atrioventrikulärbündel im menschlichen Herzen*, Jena, 1908.



Section, No. 143.

No. 179.

No. 203.

No. 229.

PLATE V. Serial sections in the horizontal plane of the septum of a healthy human heart, illustrating the origin, position and course of the auriculo-ventricular bundle. The sections were treated with van Gieson's stain; the fibrous tissue consequently appears dark, the muscle tissue pale. (× 4.)

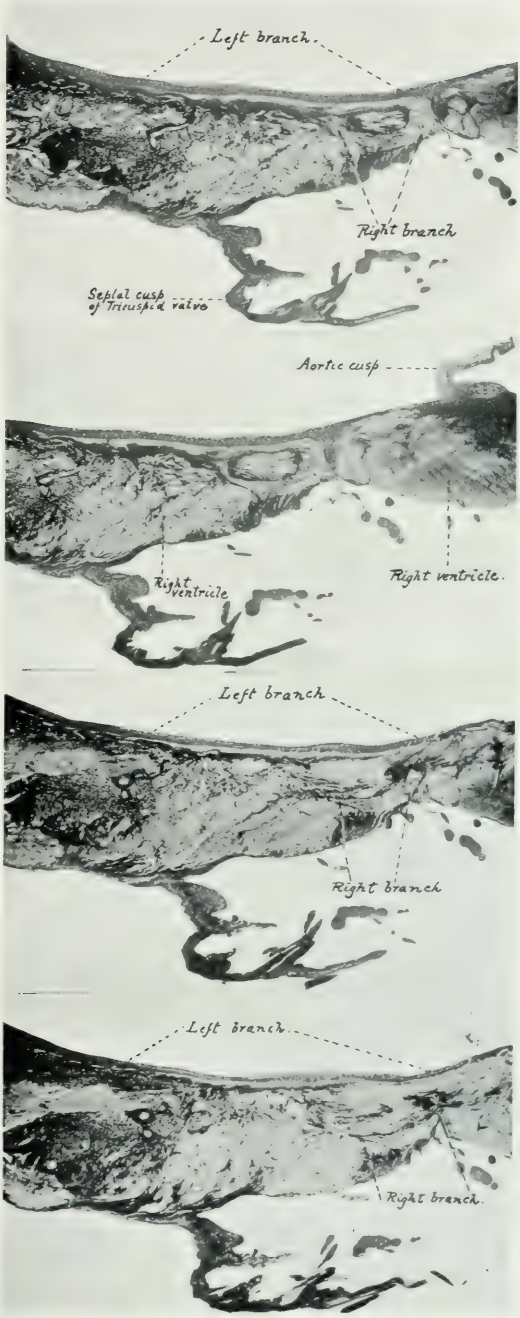


PLATE VI.—Further sections from the same heart as depicted in Plate V., to show the bifurcation of the auriculo-ventricular bundle and its two main branches. (× 4.)

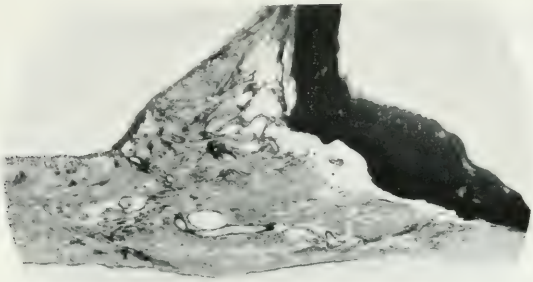


Fig. 1.

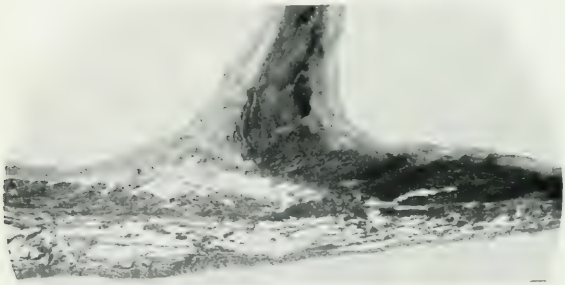


Fig. 2.

Fig. 3.

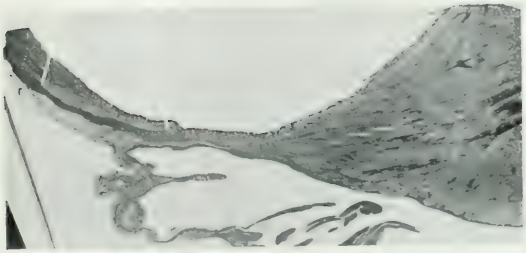


Fig. 4.

Plate VII. Sections of the septum of the heart described in the text. Figs. 1, 2 and 3 are horizontal sections taken from that portion of the septum which is indicated by the dotted line in Plate IV., Fig. 1. Fig. 4 shows a horizontal section passing through the upper part of the pars membranacea septi. (All × 4.)

aortic cusp of the mitral valve. This slender branch is described by Mönckeberg in the heart both of the fœtus and of the child. In section No. 245 (Plate VI.) we have now passed just below the deepest portion of the pars membranacea septi, and the bundle is seen to be dividing. Although the separation of the two branches is as yet incomplete, the left branch is spreading out in a fan-like fashion beneath the endocardium, on the left side of the septum. In section No. 247 the mass of ventricular musculature which is separating the two branches of the bundle from each other has become larger, but the two branches are still connected together both anteriorly and posteriorly. In section No. 253 the separation becomes complete, the left branch being spread out in the subendocardial tissue on the left side of the septum, while the right branch, presenting a somewhat crescentic form, lies on the right side. Section No. 259 passes well below the membranous septum, and the right and left branches still retain much the same relative positions as in section No. 253.

We did not trace the branches any further in this heart, but have done so in others. The left branch can be readily followed in serial sections. Its terminal ramifications, the Purkinje fibres, are most easily found in the subendocardial tissue in the neighbourhood of the anterior papillary muscle of the left ventricle. It is more difficult to follow the course of the right branch; and when it passes downwards, not in the subendocardial tissue but buried in the ventricular musculature, it may be, as Mönckeberg says, impossible to follow it, even in serial sections.

As regards the normal histology of the auriculo-ventricular node and bundle, we find our opinions are in all essential respects in agreement with the views expressed by Mönckeberg. The structure of the healthy auriculo-ventricular node in a young adult is depicted in Plate VIII. Fig. 1. The node consists of a highly irregular network of small muscle fibres, fusing one with another. The fibres present a faint transverse striation, and possess somewhat large ovoid nuclei, which stain somewhat less intensely than the smaller nuclei of the connective tissue cells. The muscle fibres are surrounded by thin connective tissue fibres, and small blood-vessels and capillaries are found in the meshes of the network. While ganglia and nerve fibres are readily enough detected in connection with the sino-auricular node of the hearts that we have examined, we have as yet failed to find any direct histological evidence of nerve tissue either in the auriculo-ventricular node or bundle. We do not mean to imply

that this node and bundle are devoid of nerve elements. The recent work of Gordon Wilson[1] is sufficient proof to the contrary. But our investigations indicate that nervous elements are certainly less abundant in the auriculo-ventricular node than in the sino-auricular node; and it is evident that special methods of examination are required to demonstrate their existence in the *a-v* node.

In structure the main stem of the healthy auriculo-ventricular bundle differs somewhat from that of the node whence it springs. The appearances are shown in Plate VIII. Fig. 2. The slender muscle fibres constitute a network; not a highly irregular one as in the node, but one in which the fibres fuse with one another at an acute angle. The meshes of the network are therefore much longer than they are broad, and the appearances are aptly compared by Mönckeberg to those of a collapsed fishing-net which is being pulled on at both ends. The muscle fibres show faint transverse striation; the nuclei are more spindle-shaped and stain more deeply than those of the node; and the muscle-fibres are encircled by fine strands of connective tissue. In the meshes of the network there are capillaries and small blood-vessels, the latter being in some instances larger and more abundant just behind the point of bifurcation of the bundle than elsewhere in its course. The transition between the histological characters of the auriculo-ventricular node and those of the bundle is a gradual one.

If we now proceed to consider the conditions which were found in Sir William Gairdner's heart, we may state at the outset that the only portions of the primitive cardiac tissue that was diseased were the auriculo-ventricular node and the first part of the auriculo-ventricular bundle. Both were markedly fibrous and calcified. In the lower portion of the bundle, in its branches and in the Purkinje fibres, we failed to detect any evidence of disease. We are fully aware that the amount of fibrous tissue in the node and bundle is usually greater in advanced life than in early manhood and childhood. But in the heart now under consideration the fibrous transformation was so marked and so intimately associated with calcareous deposits as to leave no doubt whatever that the appearances were not those of the aged healthy heart, but, on the contrary, were the direct result of pathological processes.

Two blocks of tissue were taken from the septum. The first

[1] *Proceedings of the Royal Society*, London, 1909, Series B. vol. lxxxi. No. B. 546, p. 151.

PLATE VIII.

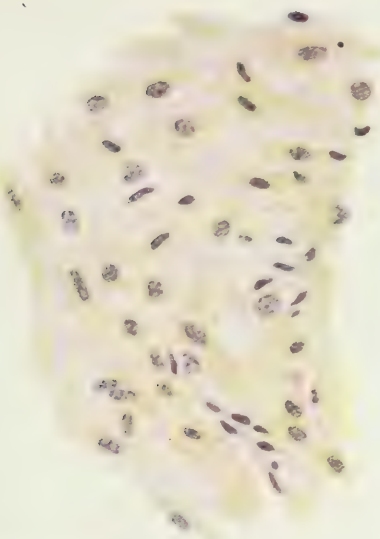


FIG. 1.—Portion of the auriculo-ventricular node in a healthy human heart. Hæmalum and van Gieson's stain. (× 350.)

FIG. 2.—Portion of the first part of the auriculo-ventricular bundle in a healthy human heart. Hæmalum and van Gieson's stain. (× 350.)

FIG. 3.—Section in a horizontal plane the septum of the heart described in the text.

block, including the pars membranacea septi and portions of the auricular and ventricular septa around it, together with the anterior portion of the septal cusp of the tricuspid valve, was removed before the photograph reproduced in Plate IV. Fig. 1 was taken. The site and extent of the first block is therefore indicated in that figure by the black rectangular gap in the septum, partially covered by a portion of the infundibular cusp of the tricuspid valve which, when the photograph was taken, lay across the gap. This block was cut in serial section from above downwards and in the horizontal plane as already described. The block was found to contain the lower portion of the main stem of the bundle, its bifurcation, and the first part of its two branches. A second block of the auricular and ventricular septal tissues extending as far backwards as the mouth of the coronary sinus, and including the attachment of the aortic cusp of the mitral valve, was therefore removed. The size and extent of this block of tissue are indicated by the dotted rectangular area outlined in Plate IV. Fig. 1.

In the first block of tissue (see Plate VII. Fig. 4; Plate VIII. Fig. 3; and Plate IX. Fig. 2) we found no evidence of disease in the main stem of the bundle or in its branches. In Plate VIII. Fig. 3 we see a section of the septum stained by Mayer's hæmalum and van Gieson's stain. The main stem of the bundle is passing forwards from the right side of the auricular septum to assume a more central position. The bundle is enclosed in its connective tissue sheath, and in the latter there are some calcareous deposits which have taken the hæmatein stain. Further to the right of the bundle there is a portion of the auricular musculature, together with adipose tissue. In this illustration the bundle is seen to become broader as its passes forwards. This increase, however, is more apparent than real, being accounted for by the presence of a large blood-vessel which, as is shown in the illustration, is passing through the bundle somewhat obliquely to its long axis. Calcareous deposits were found in various parts of the fibrous sheath of the bundle. Such a deposit is seen in Plate IX. Fig. 2, which shows a portion of the main bundle somewhat further forward and further to the left than that in Plate VIII. Fig 3—close in fact to its point of bifurcation. A low-power view of the bundle, passing on the left side of the septum towards the thin pars membranacea septi, is also given in Plate VII. Fig. 4.

The striking pathological changes affected the auriculo-ventricular node and the first part of the bundle, as contained in the second block of septal tissue.

In the earlier sections from this block, which was cut in the horizontal plane, the auricular septum was found to contain much adipose tissue. The auricular muscle fibres were hypertrophied, but otherwise healthy. The aortic cusp of the mitral valve (see Plate VII. Fig. 1) was dense and fibrous, and contained numerous small calcareous deposits. In subsequent sections, passing lower down towards the line of attachment of the septal cusp of the tricuspid valve, the fibrous change spreads from the mitral valve into the auricular septum, and there is much calcareous deposit in the dense fibrous tissue. In Plate VII. Fig. 3 we observe how dense is the fibrous transformation. It is here that the auriculo-ventricular node and first part of the bundle are involved by the fibrosis and calcification. The condition is depicted in the photo-micrograph in Plate IX. Fig. 1, and in the coloured illustration in Plate X. Both the fibrosis and the calcification were extremely pronounced, and just as auriculo-ventricular dissociation may be induced by a complete section of the bundle or by the application of a clamp thereto, so, in our opinion, there is no doubt that the structural changes which we have described in the auriculo-ventricular bundle were amply sufficient to constitute an impassable barrier to the transmission of stimuli from auricle to ventricle.

The Purkinje fibres were found to be perfectly normal, and no evidence of disease was observed in the vagus nerves. The tissues at the junction of the superior vena cava and the right auricle presented no abnormality beyond the fact of there being a considerable increase of adipose tissue in this region.

Before concluding, we may refer very briefly to the conditions observed in other instances of heart-block. The earlier cases have already been discussed by us in a previous communication[1] in 1907. Since then, A. G. Gibson[2] has collected thirteen cases from the literature. He adds another which he himself examined; and in collaboration with Turrell[3] he has recorded yet another case. Lewis[4] collected records of twenty-seven cases, but after analysing them he concludes that in only seven was both the clinical and the histological evidence fully satisfactory. Nagayo[5] has still more recently analysed the literature of the subject.

[1] *The Practitioner*, 1907, vol. lxxviii. p. 589.
[2] *Quarterly Journal of Medicine*, 1908, vol. i. p. 182.
[3] *British Medical Journal*, 1908, vol. ii. p. 1486.
[4] *Ibid.*, 1908, vol. ii. p. 1798.
[5] *Zeitschrift für klinische Medizin*, 1909, Bd. lxvii. S. 495.

PLATE IX.

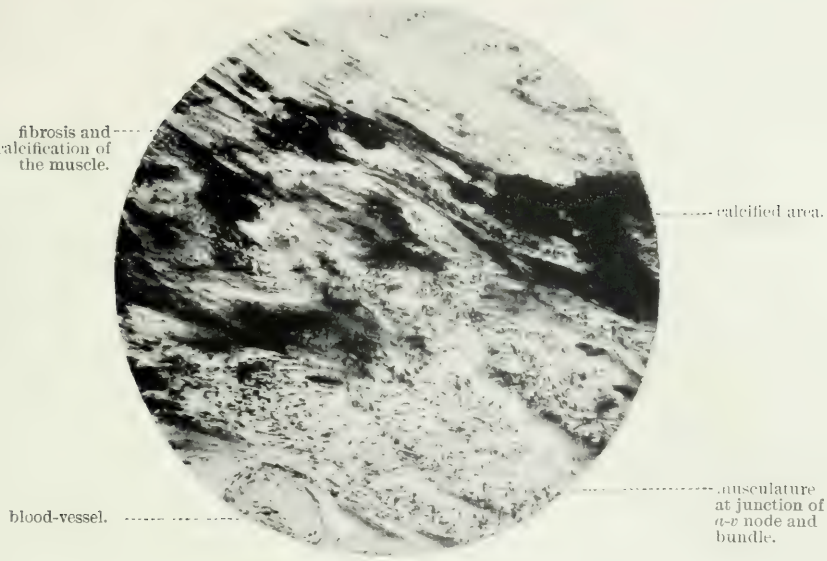


FIG. 1.—Heart-block. The junction of the auriculo-ventricular node and bundle, showing fibrosis and calcification. (× 50.)

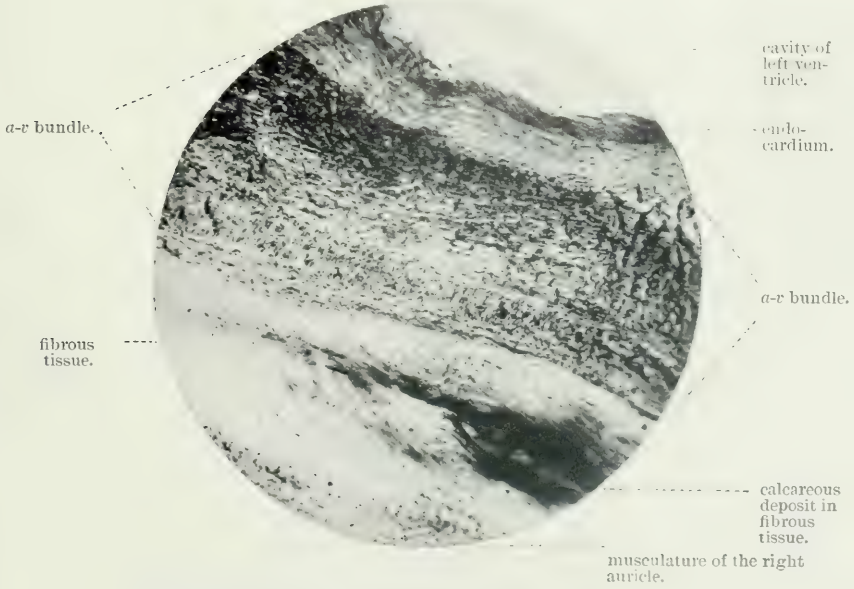


FIG. 2.—Heart-block. The auriculo-ventricular bundle close to its point of bifurcation. In the fibrous tissue around the bundle there are some calcareous deposits, one of which is shown in the figure. (× 50.)

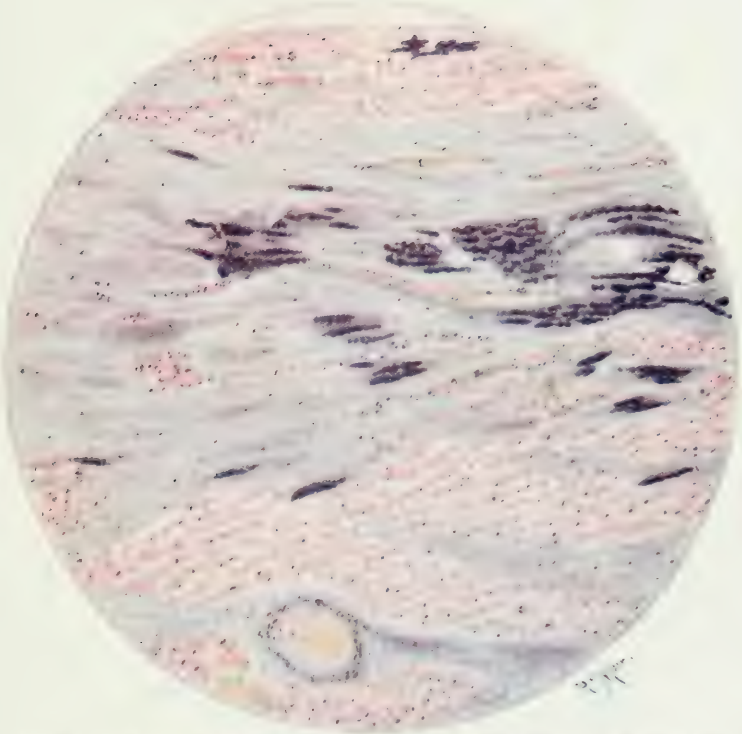


PLATE X.—The junction of the auriculo-ventricular node and bundle in the case of heart-block described in the text. The section is stained with hæmalum and eosin, and shows fibrosis and calcification of the tissues. (× 50.)

While a variety of lesions have been demonstrated, there are only three other cases, resembling that which we now record, where there is clear evidence of complete heart-block due to fibrous and calcareous changes in the auriculo-ventricular bundle. The three cases are those recorded by Beck and Stokes,[1] by Mönckeberg[2] (Heart No. CXIII.), and by Nagayo.[3]

[1] *Archives of Internal Medicine*, 1908, vol. ii. p. 277.

[2] *Untersuchungen über das Atrioventrikulärbündel im menschlichen Herzen*, Jena, 1908.

[3] *Zeitschrift für klinische Medizin*, 1909, Bd. lxvii. S. 495.

ON PERCUSSION AS AN AID TO THE DIAGNOSIS OF FRACTURES OF THE SKULL.

By J. HOGARTH PRINGLE, M.B., F.R.C.S.(Eng.),
Surgeon, Royal Infirmary, Glasgow.

THERE are numerous cases of fracture of the skull seen in practice where, in consequence of the presence of deformity of the skull, depression or elevation of fragments, &c., or in consequence of a wound exposing a fracture, the diagnosis of the injury is at once obvious. But there is probably a still larger number of cases in which the diagnosis of fracture is by no means clear and is often a matter of considerable dubiety. In these cases every possible aid to diagnosis becomes valuable.

For it is obvious that it is of great importance to determine as quickly as possible whether a fracture is present or not, and it is frequently of still greater importance to be able to locate its situation, even if it be only approximately.

In percussion of the skull we have an aid to diagnosis which, in my experience, may be an extremely useful one. As it is one which I fancy is not very widely practised, I venture to draw attention to it and to its possibilities.

The late Dr. Alexander Robertson of this city wrote on the value of percussion of the skull in certain mental conditions, but the only surgeon who has written on the subject is Sir William Macewen, who has attached considerable importance to the percussion of the skull in cases of cerebral abscess and incidentally mentions its value in cases of fracture of the skull.

Unfortunately percussion only gives assistance when the fracture affects the vault or sides of the skull. In fractures absolutely confined to the base no alteration in the note obtained on percussing the vault or lateral aspects of the skull can be appreciated.

The percussion is carried out by the finger striking the scalp directly without any intermediary pleximeter. It is perhaps preferable that the scalp should be shaved, but this is not by any means absolutely necessary. The head of the patient should be supported with the examiner's left hand placed beneath the occiput, while the right hand is left free to percuss.

It will be found that a slightly different note will be produced, according as the patient's mouth is open or closed, so that, in

doubtful cases at least, care must be taken to see that the mouth is either closed or open throughout the examination. There are, however, many instances where the difference in the note obtained over the two sides of the skull is so marked that this detail is not of any consequence.

Any swelling of the scalp that may be present will very considerably modify the note produced, and will occasionally entirely interfere with the examination. A hæmatoma or any œdema of the scalp will muffle in a very marked manner the note obtained.

The note over corresponding points on the right and left sides of the skull should be compared—for example, (1) along the sagittal suture; (2) over the parietal and occipital bones; and (3) very specially over each temporal fossa. Where a fracture exists in the neighbourhood of these areas one of two changes in the note elicited may be found to be present. (*a*) Either the note is lowered in pitch over the fracture zone, or (*b*) in addition to the lowering of the pitch a definite crack-pot quality is introduced.

It is very probable, I think, that for either change to be brought about it is necessary that a fracture (fissure) must extend a certain distance over the surface of the skull; that a very short fissure, for example, may not cause any appreciable change in the note, and the same may happen possibly in a very close fissure, or a sprung suture where the dentations still remain in close contact.

I would say that the most typical crack-pot note is produced in cases where there is comminution—where one or several fragments of bone, and these of some magnitude, are loose and can be tapped into contact with one another by the percussing finger—but apart from this there must be either a long fissure or a definite angle in the course of a fissure.

A fracture of a T, L or V shape will cause a very obvious crack-pot note, and the "crack" quality in these cases is always most pronounced when the percussing finger comes over the angular portion of bone, as marked X in Fig. 1, that is to say, there must be a certain looseness or flexibility of the bone in the neighbourhood of the fracture to produce the "crack" quality.

I have verified this experience frequently in my operations upon these patients, and have often observed in these cases when percussing, on the exposed skull, along the lines of an L or V fracture that only a lowering of pitch was obtained, but that when

the percussing finger came over the angular piece of bone itself a typical crack-pot note was obtained.

In some cases no change in the percussion note is obtained at all, but a patient who is conscious will often complain of pain, always elicited by percussion at one area and often along a definitely constant line, and I have seen cases where this pain could be produced for a week or two after the accident without any variation from its original site, although lessening in its extent and degree with the course of time. Where there is no cause present that would produce tenderness of the scalp (contusion, abrasion or wound, &c.) pain of this kind may be an indication of a fracture, and my opinion that this is so is

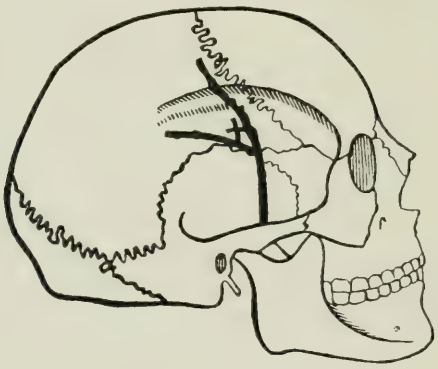


FIG. 1

strengthened by the fact that in other cases, where prior to operation a definite change in the percussion note was obtained and where the suspected fracture was found to be present on exposure of the area at operation, after recovery the patients have experienced the same local pain along what was known to be the course of a fissure. This pain may be due to a diploeitis of the bone in these cases, but it seems to me to be at least suggestive of a fracture, though of very decidedly less value than an alteration in the quality of the percussion note.

I append short notes of three cases where extravasated blood was evacuated from the interior of the skull, the localising guide being the altered percussion note.

Case I.—H. B., admitted 3rd February 1904, having fallen from the first storey of a building to the ground.

He was unconscious on admission. The right pupil wide, the

left small, and neither reacted to light. No deviation of eyes. No bleeding from ears or nose. Respiration stertorous. He could move the right limbs a little on being stimulated, but never moved the left ones.

A definitely crack-pot note was obtained on percussing the right temporal region, but no fracture could be palpated here. There was a scalp wound over the middle line of the head, but the bone was not exposed by it, and no fracture could be felt from this wound.

An incision was made over the site of the crack-pot note, and a stellate fissure fracture exposed. The pieces of bone were removed and a large extra-dural clot evacuated. It was then found the dura mater was burst beneath it, and some clot was removed from the subdural space through this opening.

The patient died a few hours later, and post-mortem examination of the head showed some laceration of the temporo-sphenoidal lobe and a rather diffused subarachnoid hæmorrhage over both the hemispheres.

The wound over the vertex did not communicate with the fracture at all.

Case II.—J. K., aged 27, admitted 11th May 1906, having fallen a distance of 35 feet. Was unconscious on admission, with both pupils widely dilated. Breathing stertorous and with a slight tendency to Cheyne-Stokes type, in short cycles. He did not move any of his limbs on stimulation. There was some bleeding from the right ear. No wound of the scalp. Percussion of the skull gave a note over the right temporal region which was definitely lower pitched in quality than the note on the opposite side or elsewhere. It was considered from the note obtained that there was probably a fracture in the right temporal fossa, so an incision was made there, and a long fissure or rather diastasis of the right coronal suture found, with a second short fissure running off at an angle from it.

The skull was trephined here, and a large extra-dural clot removed; the anterior branch of the middle meningeal artery was found torn low down in the skull and was tied.

He died several hours after the operation was completed. Post-mortem examination of the head showed that no more hæmorrhage had occurred. There was slight laceration of the right temporo-sphenoidal lobe.

Case III.—J. C., aged 60, admitted 25th November 1906. Had fallen down a stair on the previous evening, and had been unconscious ever since.

On admission the pupils were small, equal, and not reacting to light. Some rigidity of his right limbs was present, but the left limbs were flaccid. Respiration stertorous.

Percussion over the left temporal area elicited a note decidedly lower in pitch than that of the right side, but without any crack quality in it. The left temporal fossa was exposed, and a fissure fracture as in Fig. 2 found. The skull was trephined here, and an extra-dural blood clot evacuated. The dura mater exposed presented a dark blue appearance, and was therefore incised, and a large amount of blood and blood clot evacuated from the sub-dural space.

The patient died the same day. Post-mortem examination of

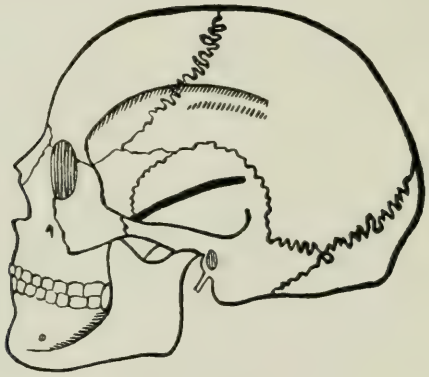


FIG. 2

the head showed a slight laceration of the temporo-sphenoidal lobe and a rather diffuse subarachnoid hæmorrhage all over both hemispheres of the brain.

I am not able yet to record the notes of a case in which a fracture of the skull has been diagnosed and located by means of the altered percussion note alone, and where, as the result of operation, the patient recovered. But the three cases above show clearly that the method is of value, for in each the patient was profoundly unconscious as the result of an injury to the head, without really any localising sign which would guide one as to where one ought to trephine or even where the fracture was situated, beyond that obtained by percussion of the skull.

Unfortunately all three patients died in spite of the operation, but I claim that by the operation they obtained the only chance

they could have of life being prolonged, through the evacuation of the extravasated blood and the relief of pressure which resulted.

Everyone with any experience of cerebral injuries knows how few of the patients who suffer from extra or subdural hæmorrhage recover even after evacuation of the blood, while without it they practically have no chance of life whatever.

In addition to these cases here reported, I find that in thirty other patients with fracture of the skull who have been under my care, it has been noted that a definite alteration in the note was present over the site of fracture which was proved to be present either by operation or post-mortem examination.

THE INTERPRETATION OF THE PORRO UTERUS IN RELATION TO THE THIRD STAGE OF LABOUR.

By D. BERRY HART, M.D., F.R.C.P.E., F.R.S.E.,

Lecturer on Midwifery and Diseases of Women, Surgeons' Hall, Edinburgh; Honorary Fellow of the American Gynæcological Society; Corresponding Fellow of the Leipzig Obstetrical Society; Honorary Fellow of the Berlin Obstetrical Society, &c.

When Porro, in 1870, performed Cæsarean section according to his well-known method, he not only made the first distinct advance in the perfecting of that operation, but gave obstetricians specimens on which the phenomena of the Third stage could be studied in a way no other natural experiment has since afforded.

Since 1886, when Barbour published the most outstanding and able paper on such specimens, the whole question of the third stage mechanism has been debated without any final agreement as to its nature, and, indeed, at present an apathy on this subject has come over the profession—over both investigator and practical obstetrician.

The real reason of this blight on investigation has been that the question has usually been investigated on the supposition that the separation must take place in such a way as to check hæmorrhage, *i.e.* during a pain; and any view as to its occurrence by any other mechanism, after a pain, for instance, has been viewed with the greatest suspicion, especially by the general practitioner, to whom the phrase, "relaxation after a pain" is anathema, and "uterus like a cricket ball," the only safe and satisfactory descriptive term.

Matthews Duncan held strongly that the placenta separated from shrinkage of the placental site, and when confronted with the fact ascertained by Barbour, that a shrinkage from 7 ins. × 7 ins. to 4 ins. × 4 ins. did not bring about separation, merely remarked in the well-deserved eulogy he gave Barbour, that he had no doubt the placenta separated at a lower shrinkage area.

The great thing to explain in the Third stage is how the placenta separates. If we can explain that, everything else is easy. Curiously enough, in Germany, the question of the third stage is not looked at in this way; separation and expulsion are considered together, and there has consequently never been the controversy there we have had here; the whole question is

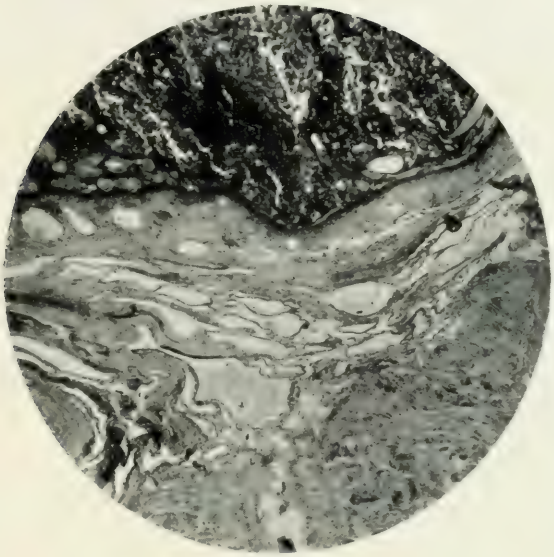


Fig. 1.—Third-stage uterus with placenta attached. The placenta is above; then comes the compact layer, next the spongy layer, and finally the muscle. ($\frac{5}{1}$.)

Fig. 2.—*Post-partum* uterus stained by Weigert's method. The large dark-stained area is the muscle and the fine filaments between elastic tissue mainly. ($\frac{5}{1}$.)

resolved into one of expulsion *nach Duncan oder Schultze*, and the general opinion is that it occurs either way.

The anatomical specimens we have for the study of the third-stage mechanism are of two kinds, viz. the Porro uteri and those obtained from cases where the third stage was incomplete, and either the whole uterus cut out, or a section made of the undisturbed cadaver—entire preparations, as I have termed them. These preparations—the Porro and the entire—differ *toto cœlo*, and any explanation must reconcile them, and not ignore one. The latter — the entire — are usually put out of court as to evidence, a most unscientific and unwise procedure.

The Porro uteri are all alike practically. The uterine wall is uniformly retracted, the average thickness being about 1½ ins. (3·75 cm.). This is the average of the uterine retraction immediately *post partum*, and appears to express the utmost retraction the parturient uterus is capable of. The placenta is usually at that extreme retraction, unseparated in the Porro uteri. There is no uterine cavity, as Barbour pointed out, the placenta being grasped all round. In a case examined by me the placenta was separated at the centre of the site, and the space occupied by blood clot.

How are we to interpret these appearances? We must first note how the preparation has been treated in the Porro operation. There has been a mesial sagittal and partial incision, and then a transverse and complete one at its lowest part. This has given the uterine muscle power to retract uniformly to its utmost extent. The amount of the thickening of the uterine muscle is equal to that of a *post-partum* uterus. Since the placental area has shrunk from 7 ins. × 7 ins. (17·5 cm. × 17·5 cm.) to 4 ins. × 4 ins. (10 cm. × 10 cm.), it seems to me a legitimate deduction that shrinkage of the placental area does not separate the placenta. The filaments in the spongy layer (Fig. 1) which are torn through in this separation are only a few mm. long at the utmost, and slight disproportion will snap them.

This, indeed, is the conclusion Dr. Barbour comes to, but he adds: "4. *Diminution in area beyond that and the action of the whole on the placenta mass* I regard as the formal cause; the *pains of the Third stage* as the efficient cause of separation."

Practically, therefore, Dr. Barbour places the shrinkage area necessary for separation below 4 ins. × 4 ins., but in the twenty years or so that have elapsed since his opinion and Duncan's were stated, this hypothetical area has not been demonstrated, and although

there is a general opinion held that such shrinkage causes separation, it has been quite forgotten that the demonstration of it has only been expected and not actual.

It is a curious and paradoxical fact that there is one separation of the placenta, as to the mechanism of which we are all agreed, viz. the method of separation of the placenta in placenta prævia. This was described by Matthews Duncan in 1873, and although he expresses himself very cautiously, as he was obliged to do in the state of knowledge then, he yet states very distinctly, "In cases of placenta prævia . . . that which operates is expansion of the seat of its attachment" (*op. cit.* p. 344).

If we now turn to the entire Third-stage uteri we find specimens of a remarkable nature. Where the placenta is attached, the uterine wall is on an average one half-inch on section; where the membranes are attached it is a little thicker. In the cases where the placenta is partially separated, the uterine wall is comparatively thin on section opposite the unseparated portion, but thicker where separation has occurred. In no case, however, is the thickness equal to that of the Porro uterus in any condition. Another remarkable fact, correlated with the above, is that the shrinkage of the placental site is not so extreme as in the Porro cases.

If we take the separation in placenta prævia first, we see that it is due to a disproportion between the placental site and the placental area—the former being uterine, the latter placental—severing the microscopical filaments joining them. We all know, too well, how speedily the placenta separates in placenta prævia, and it is evident that the disproportion of area view in placenta prævia separation is accepted by all.

It naturally occurred to me, in 1886, that a modification of this mechanism would account for the third-stage separations and I then stated that, and now wish to emphasise it.

It has often been said that you cannot apply what happens in placenta prævia to the Third stage, and it has therefore been ruled out of court by the area-shrinkage advocates, apparently on legal grounds, and this has been done wisely, because of its danger as evidence in regard to the Third-stage shrinkage theory of separation. It is evident that the shrinkage area theory in the Third-stage separation, and the placenta prævia separation by expansion are diametrically opposed, and thus the apparent rigid reasoning applied.

The two, however, can be reconciled, if the separation in the

Third stage takes place not during but after the pains, and this is the crux of the question.

I do not discuss the behaviour of the placental area and site during the first two stages of labour when the placenta is in normal position. It is sufficient to say they are always equivalent. In the Third stage, however, the question must seriously engage our attention.

We know that after the expulsion of the infant, the uterus retracts and the fundus sinks, probably from intra-abdominal action and the pressure of the attendant's hand, so that it lies at or about the level of the navel. As Barbour's sections and many others have clearly shown, the placenta is grasped all round, there is no cavity, and the placental area and placental site are equivalent in area, and each 4 ins. × 4 ins. There is, in other words, no disproportion between these areas, and thus no separation can take place. We may put it in another way. If during labour in a case of placenta prævia the lower uterine segment had not expanded in area and the prævial part in the placenta had remained equivalent, then no separation of the placenta could have taken place. Such an occurrence is of course an impossibility, but it helps to emphasise the conditions during the third-stage pain.

Another question crops up here. Those who demand shrinkage of the placental site as the cause of separation of the placenta have never explained why such extreme shrinkage, viz. that below 4 ins. × 4 ins. according to Duncan and Barbour, is necessary to tear across the minute filaments of the spongy layer joining the areas—a minute shrinkage should be enough if such could be effective. The very fact that such extreme shrinkage is not effective shows really that it never can.

A very important phase in the behaviour of the uterus during the Third stage has been always ignored, viz. its enlargement and its softer character to touch after the pain is over. There is a very evident and almost laudable reason for this. The clinical obstetrician knows only too well that where hæmorrhage occurs from the uterine cavity above the retraction ring, the uterus is relaxed and soft, and he can only check hæmorrhage by making it retract and become hard. That, however, does not affect the fact that after a pain is over, the uterus becomes a little larger, feels softer, and the walls of the uterine interior increase in area, all this happening without hæmorrhage.

This expansion is due to two things, viz. (1) *The elasticity of the uterus*, and (2) *the elastic tissue developed between the muscular bundles.*

Of the former little seems to be known, and I therefore do not apply it.

2. *The Elastic Tissue between the Muscles.*—If a *post partum* uterus be stained by Weigert's method so as to display the elastic tissue, we find a very marked amount of it present between the bundles (Fig. 2). I have had prepared such sections, five inches (12·5 cm.) long, showing the retracted body of the uterus, the lower uterine segment, cervix and vagina.

Beginning at the peritoneum, we have a compact layer of muscle alone, about 0·3 cm. broad, and running into the lower uterine segment as a distinct bundle. Then comes a looser layer, almost 1 cm. in breadth, to which our President has drawn attention, made up mainly of elastic tissue and oblique or circular muscular fibres. Next to the uterine cavity is a layer of muscle, 1·5 cm. at its thickest part, but permeated with elastic tissue, the muscle, however, greatly preponderating. There is apparently little elastic tissue in the lower uterine segment and cervix, but this may be due to a close felting with the muscle, and may require maceration to determine it. At the outer part of the vagina, and between peritoneum and lower uterine segment, the elastic tissue is well seen.

When, therefore, a pain has died off, the elasticity of the muscle, and especially of the interpenetrating elastic tissue, asserts itself, we get the softer, bulkier uterus, and, above all, an increase in area of the apposed internal uterine surfaces, the two surfaces sliding on one another without separation. This increase in area is not participated in by the non-vascular, non-elastic placenta (I have found no elastic tissue in the placenta proper by Weigert's stain), and thus we get the disproportion between placental site and placental area, and the tearing of the spongy layer. This occurs after each pain, until at last, when both membranes and placenta are thus separated, the uterus, gathering itself up, as it were, expels the placenta according to Schultze's or Duncan's mechanism, which are really mechanisms of expulsion but not of separation.

The arguments against the theory of separation of the placenta in the third stage of labour by a direct shrinkage of the placental site, are:—

1. Barbour, its most eminent exponent, has stated that the placenta does not separate at 4 ins. × 4 ins. shrinkage.
2. The *obiter dictum* of the area shrinkage advocates is that it must separate at a shrinkage below this. An *obiter dictum*

—*i.e.* a statement of opinion of which no evidence is given—is, however, current coin only in Theology and Law, but a mere promise to pay in Science—a promise not yet met in this instance.

The interpretation of the Porro uterus is for me that of an over-retracted uterus, as Sänger and Champneys long ago urged, a demonstration that shrinkage of the placental area cannot separate the placenta; *that* requires the disproportion only given in the elastic recoil after a pain.

Placental and membranes separation thus follow one formula, both above and below the retraction ring. "Separation can only occur as the result of a disproportion between placental site (uterine) and placental area." Blood effusion, traction of a descending placenta or membranes, are adjuvant but not essential.

The amount of "retraction" is not of importance; what is essential is a disproportion between placental area and placental site. A placenta may thus separate and be expelled while the child is *in utero*, if such a disproportion can occur. This is seen in the well-known prolapsus placentae cases.

We see then that the over-retracted Porro uterus has misled us all, and that the entire uterus gives a more accurate idea of what the third-stage mechanism is.

I have not considered many points of interest corroborative of the view advanced, as these have already been discussed by me in previous papers.

The question finally arises as to what bearing these views have in the practical management of the third stage. The Third stage may be managed in two ways.

In the *first method* the attendant grasps the uterus firmly, brings on pain by friction if he thinks the uterus sluggish, and reinforces each pain by pressure. This is the active method introduced by Crede many years ago (before 1870).

In this way the third stage may be shortened, but the practitioner who practises it will find first, that he has hæmorrhage, and occasional retention of membranes with all their unpleasant sequelæ. He may, indeed, have a disaster if the upper edge of the placenta is at the Fallopian tube angle, and may perhaps expel the placenta and membranes, *minus* a piece of the placenta the size of the tip of the finger. I have found this piece, septic, in a *post-mortem* uterus, where it was responsible for the death of the patient. The introduction of the Crede method has been undoubtedly disastrous in practical midwifery.

The faults of this method are—

1. The placenta is separated, or an attempt is made to separate it, during the pains—the wrong mechanism of separation, I hold.

2. The uterus does not get the necessary rest between its contractions, and thus inertia is brought on.

3. When partially separated, the expression may tear off the bulk of the placenta or membranes from an unseparated portion.

The *second method* is to keep the hand permanently on the uterus, wait for pains, and not to compress the uterus unless there are indications for it, the main one being hæmorrhage. The size of the uterus should be noted, and only when its bulk markedly diminishes, indicating separation, should gentle expression of the uterus or pressure in the supra-pubic region, according as the placenta is in the lower uterine segment or in the vagina, be employed.

This method goes on the theory that the placenta is separated after the pain, that hand pressure will not separate it safely at the time, and that the safe time to use hand grasping is after the placenta has separated.

The time for the Third stage varies from twenty minutes to an hour, and the practitioner who gives the proper time and follows this plan with the necessary patience Nature demands, will have the reward she always gives to those who understand and obey her.

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THE PROBLEM OF THE SANE EPILEPTIC.

By EDWIN BRAMWELL, M.B., F.R.C.P.(Edin. and Lond.),
Assistant-Physician to the Edinburgh Royal Infirmary.

LET me introduce this paper with the following propositions:—Firstly, that there is, so far as I know, no reason for supposing that epilepsy is less frequent in Scotland than elsewhere; secondly, that it is often difficult or impossible for an epileptic to obtain employment, even granting that his wage-earning capacity is up to the average; thirdly, that it is desirable that further provision should be made in Scotland for the education and employment of the sane epileptic; and, fourthly, that the industrial colony is the best means of educating, employing, caring for and treating the sane epileptic. Finally, I shall refer very briefly to the arrangement of an epileptic colony.

The Poor Law designates sane epileptics as "epileptics who are not certified as lunatics under the Lunacy Act of 1890." The Royal Commission on the Care and Control of the Feeble-minded, in the Blue Book issued last year (1908), points out that "sane epileptics include epileptics whose minds are feeble but who will attend to advice—and praise or blame affects them; who are subject to control by friends or self-control."

The sane epileptic occupies an unenviable position in the struggle for existence. Endowed, it may be, with the necessary mental and physical qualifications of the successful wage-getter, the disease from which he suffers frequently precludes him from earning the support necessary for his maintenance.

Epilepsy manifests itself, as is well known, in a considerable proportion of cases in the first ten years of life or early in the second decade. The education of the individual is, in consequence, often interfered with in such a way as to prejudice his chances in the competition of after life. Parents may prefer to keep the child at home, endeavouring thereby to screen his failing from publicity. The teacher, on the other hand, may request the child's removal from school because of possible ill-effects which the fits may have upon the other children in the class, or it may be on the plea that undue irritability and a passionate temper, characteristics of common occurrence in these children, necessitate special allowances which are incompatible with discipline. Irregular attendance at school, in association often with defective mental power, brings

the epileptic child into competition with his juniors, a circumstance which tends to influence unfavourably his *morale* and self-respect; while, in addition, his failings are apt to expose him to the thoughtless remarks and ridicule of his companions. The education of epileptic children is thus a matter which calls for serious consideration.

The lower and middle class epileptic, even granting that he has average mental capabilities, for the reasons above given, usually starts life with an education inferior to that of his contemporaries. This in itself constitutes a handicap, although among the labouring classes the individual wage-earning capacity is probably little, if at all, impaired thereby. Difficulties arise when the epileptic seeks employment. The fact that he is an epileptic debars him of necessity from following certain occupations in the pursuit of which the occurrence of a fit might, from the special nature of his work, be attended with dangerous consequences. Again, he often finds after he has selected a trade that he cannot obtain work, the circumstance that he takes fits precluding him from selection, quite irrespective of the qualifications which he may possess for the post he seeks. Hence it often happens that the epileptic is unable to obtain employment, and has to depend for his subsistence upon his relations or upon private charity. Still more difficult must it be for the sane epileptic of under-average mental capacity to support himself in any walk of life that calls for more than the lowest form of manual labour.

The inquiry of Dr. Melland, who was appointed by the Royal Commission to investigate the question in the Manchester, Chorlton and Prestwich area, a type of an urban district, confirms the belief that a certain proportion of cases of epilepsy drift into the workhouse. Dr. Melland found 91 persons in the workhouses of this area whom he included as sane epileptics. "The great majority of these, all except 13, have been obliged to come to the workhouse as the result of the interference with their power of getting or retaining work which the fits entailed. Several had held fairly good positions or done distinctly skilled work before their affliction forced them to relinquish their work." In 1893 there were 626 uncertified epileptics in the London workhouses, 436 between the ages of 16 and 60. The evidence brought before the Royal Commission, indicating the bad influence which life in the workhouse had upon epileptics, led to their recommendation that epileptics should be dealt with apart from the Poor Law and placed under the care of the Board of Control and the committees for the care of the mentally defective.

I submit to you that the sane epileptic belonging to the respectable working and middle classes who is unable to obtain employment because of his disease, especially the epileptic who is capable of work—and I have met with a considerable number of such cases—is at least as deserving a subject of philanthropy as the imbecile; yet, as Aldren Turner puts it, "unless he becomes insane, or is at the outset feeble-minded or defective, or becomes a pauper, neither philanthropy nor the State takes note of his condition."

Before saying anything as to the manner in which the problem of the care of the sane epileptic has been dealt with, it is advisable that we should have some idea as to the frequency of these cases. Reference to the various estimates arrived at by different authorities in different communities is unnecessary. On this question the classical work of Letchworth may be consulted. Suffice it to say that from special investigations undertaken by the Royal Commission, both in England and Ireland, the conclusion was arrived at that the proportion of sane epileptics may be placed at 1 to 1000 of the total population. According to this calculation, it would appear that there were about 32,527 sane epileptics in England. There is no reason for supposing, so far as I know, that this class of case is less common north of the Tweed, although it would seem that "there are no sufficient statistics of sane epileptics in Scotland." My own experience in the out-patient room of Leith Hospital, where I have notes of between 60 and 70 patients suffering from epilepsy, seen within the last 6 years, a considerable number of whom complained of inability to obtain work because of their disease, lends support to the view that sane epileptics are at least as common in Leith as elsewhere.

So far I have attempted to convince you that the care of the sane epileptic demands attention. Let us now consider the provision which has been made for these cases. There seems to be universal agreement that an open-air life, with regular hours and constant systematic employment suited to his capabilities, is the most suitable for the epileptic. Such is the life which is led in the epileptic colony, regarding the advantages of which the following conclusion was arrived at by the Royal Commission:—"The evidence which we have received on all sides in favour of the treatment of sane epileptics in an industrial colony we accept as decisive." The evidence before the Royal Commission indicated the desirability of combining schools for the education of epileptic children with the colonies for the permanent members of this class.

The first epileptic colony was founded in Bielfield in Germany. There are now several on the Continent and a number in America, descriptions of which will be found in Letchworth's book and in a "Report on a Visit of Inspection to Colonies and Hospitals for Epileptics in the United States of America," by J. M. Rhodes, M.D., and E. W. Marshall, C.A.

Space does not permit me to do more than briefly describe the constitution of a colony, and I cannot do better than take as a type the Chalfont Colony in Buckinghamshire, which I have personally visited, and which was opened by the National Society for the Employment of Epileptics in 1894. This is one of the colonies referred to by the Royal Commission when they say, "Two at least of these institutions represent a type of colony or colony home which might, we think, be generally adopted in any future arrangement for the care of so-called sane epileptics."

The origin of the Chalfont Colony, the first of its kind in England, for the following facts regarding which I am indebted to the Annual Report of the National Society for the Employment of Epileptics, is of interest:—

In 1890 a committee, composed of "representatives of the British Medical Association and of many charitable institutions, together with Poor Law Guardians and others specially conversant with this question," was appointed to consider and report to the Charity Organisation Society of London "upon the public and charitable provisions made for the care and training of feeble-minded, epileptic, deformed and crippled persons." The need for better provision for epileptics was especially emphasised in this report, in which it was shown that large numbers of epileptics lost their situations and were unable to obtain employment. The Lord Mayor presided at a public meeting, held at the Mansion House on 25th January 1893, when it was decided "that it is expedient to establish in England a colony for epileptics capable of work on the same lines, as far as circumstances shall render advisable, as the industrial colonies successfully carried on near Bielfield in Germany and elsewhere." Liberal subscriptions were received, and the National Society for the Employment of Epileptics, of which the Prince of Wales is now President, was instituted. "The object of the society is to establish homes where persons suffering from epilepsy, yet capable of some occupation, may enjoy the advantages of regular life with healthy surroundings, and where, under the necessary supervision, they may, according to their age, sex and condition, be educated, industrially trained, or suitably employed."

Under the auspices of the society a farm of 135 acres was purchased at Chalfont St. Peter's, Bucks, and the first building, constructed to accommodate 18 colonists, in addition to staff officers, was opened in 1894. The aim of the executive committee in the management of the colony as set forth in their report is "to avoid everything which would stamp it with an 'institutional' character. . . . It will be an industrial village, whose inhabitants will be usefully and healthfully occupied, and will as far as possible follow the avocations of ordinary life."

The Chalfont Colony is virtually a small village. It is situated in a beautiful part of Buckinghamshire 400 feet above the sea. The total extent of the colony is now 357 acres. There is accommodation for 200 colonists, about two-thirds of whom are male. No boys under 14 or girls under 16 are as yet admitted, but before long it is expected that this defect will be remedied. There are 9 houses, each holding from 12 to 26 patients. In addition, there is a convalescent home, which holds 26 male epileptics who, after an illness or injury, require a short rest. An administrative house, a central hall for religious services, lectures, &c., workshops, cow byres, a dairy and a laundry complete the buildings. Each house is in charge of a sister and either a male or female attendant. The whole is under the management of a lady superintendent. The patients follow a variety of occupations, *e.g.* carpentry, plumbing, painting, bricklaying and smith's work, the majority being employed in the farm and garden. A bailiff, who is a builder as well as a farmer, looks after the farm. A gardener and a few labourers are also employed. The patients live a routine life, with regular employment each according to his capacity, simple diet and a minimum of drug treatment. A weekly charge of 10s. is made, which may be paid by the Board of Guardians. The colony is dependent for its maintenance upon subscriptions, upon donations which have been given from time to time for particular purposes, and upon the money received from the colonists themselves, in addition to the profit derived from the sale of the farm produce.

As regards the effect produced upon the disease by the colony life, it is found that in from 6 to 10 per cent. cessation of the fits occurs and the patient is discharged. In a considerable proportion the fits are much reduced in frequency, while "in the majority of cases, although little if any diminution takes place in the number of fits from year to year, we do find a material improvement in their physical condition, a feeling of satisfaction in their work and amusements, and a material lessening in the tendency towards

dementia" (Report of Medical Staff, 1904). The recommendation of the Royal Commission with regard to epileptic colonies is as follows:—"We may conclude that taking into account the nature and character of the disease, treatment in a colony should be provided both for child and adult; that to meet the demands of the disease, treatment subject to the necessary safeguards should be available for patients at all ages, if proper provision is not forthcoming at the patient's home; that the present accommodation is not only insufficient, but that it is not yet in any measure co-ordinated so as to meet the needs either of children or adults in such a way as to ensure that the treatment will follow closely on the early manifestation of the disease; and that any effectual administration for the care of epileptics must be founded on this principle."

A number of other colonies and homes for sane epileptics have been established in England, in one or two of which there are arrangements for the admission of patients who can afford to pay higher rates for their board. The demand for admission both for poorer and middle class epileptics is altogether out of proportion to the available accommodation.

Let me conclude by referring to our position in Scotland with regard to this question. The Royal Commission, after devoting 19 pages to the sane epileptic in England and 3 pages to Ireland, dismiss this subject as it relates to Scotland in a third of a page, in which it is stated "suitable provision for epileptics in Scotland is entirely wanting." The epileptic colony established a few years ago by the late Mr. Quarrier at Bridge of Weir appears, it is true, to have escaped the notice of the Commission. This colony consists of one house, which has been full since it was opened, and in which 30 male epileptics are accommodated who pay at the rate of 10s. a week. A house for females is at present in process of construction.

Why we in Scotland, who pride ourselves, and with justice too, upon our hospitals, our asylums, deaf and dumb and other institutions, have done next to nothing for epileptics, I fail to see, unless it be that the attention of the profession and the public has not been drawn to this deficiency by those of us who meet with considerable numbers of these cases.

It is my opinion, and I fancy it must be the opinion of all who are specially brought in contact with this class of case, that it is most desirable that in Scotland we should possess a colony on the lines of Chalfont, where the epileptic child can receive an education and where the adult epileptic may follow an occupation under

conditions most favourable to his disease. Such a colony for the reception of epileptics belonging to the respectable working and lower middle class, more especially as opposed to the pauper epileptic, would probably require to be founded by private enterprise, and my chief purpose in bringing this problem before you to-night is that if any of you are asked for an expression of opinion regarding the distribution of charitable bequests you may realise the need for such an institution in Scotland.

I shall not burden you with details regarding the probable initial expense and cost of maintenance of an epileptic colony. It would be necessary in the first instance to acquire a suitable farm. The cost of building and furnishing a house similar in type to the Chalfont villas, which would accommodate 26 patients, would probably be somewhere between £3000 and £4000. The cost of maintenance at Chalfont was £71, 12s. 6d. per patient per annum when the colony was first opened with 18 patients. It has now fallen to about £30 per annum. These figures are calculated on the total working expenditure, from which the weekly payment by patients of 10s. has not been deducted. The Royal Commission, recognising the difficulty of obtaining money for extension of the existing colonies to meet the demand which there is for increased accommodation, and taking cognisance at the same time of the evidence before them as to the desirability that these colonies should be run independently of State and local authorities, suggest that loans might be obtained from public funds for this purpose, and propose a scheme by which these loans might be repaid.

NOTES ON TWENTY CASES OF SPINAL ANÆSTHESIA WITH STOVAINE.

By ALEXANDER DON, M.A., M.B., C.M., F.R.C.S.,
Surgeon to and Lecturer on Clinical Surgery in the Dundee Royal Infirmary.

1. A. W., male, aged 61, with marked bronchitis and a loud systolic cardiac murmur. Suffering from tubercular testicle with fluid in the sac. Stovaine was injected into the fourth lumbar interspace, but, owing to the shortness of the needle, the canal was not reached, and chloroform was administered. Respiration ceased before he was completely under, and the operation had to be completed under local anæsthesia.

2. M. R., female, aged 37, had varicose veins removed from one leg three days previously, and took chloroform so badly that spinal anæsthesia was decided on. Injection into the third interspace. Anæsthesia was complete, up to the umbilicus, in eight minutes, and remained so for fifty minutes longer.

3. H. W., male, aged 42, with weak irregular heart, and mitral systolic murmur. Suffering from piles and ischio-rectal fistula. The third interspace was used for injection. In ten minutes the perineum and legs were completely anæsthetised, and the operation completed without pain.

4. J. L., male, aged 43, both lungs badly tubercular, fever high and pulse rapid. Injection into third interspace. Anæsthesia complete in ten minutes, as high as the umbilicus. A huge abscess in the thigh was opened, scraped, and packed with gauze.

5 and 6. C. R., female, aged 38, with presystolic and systolic murmurs and chronic nephritis. She had had a fibroid removed, and a ureteral fistula was discharging into the vagina. Injection into the second interspace. Anæsthesia complete in ten minutes, up to umbilicus, and remained so for sixty minutes. Colpocleisis was performed after making a vesico-vaginal fistula. This fistula closed later and the operation had to be done again. The second time the injection was given into the third space, and anæsthesia was complete again in ten minutes, a little above the pubes, and lasted for two hours. She complained of some fulness about the stomach after the first injection, and slight headache and nausea after the second injection.

7. J. S., female, aged 50, with evidence of early senile decay and weak fatty heart. Suffering from tuberculosis of the tarsus.

Injection into the third interspace. Anæsthesia complete to above the pubes in five minutes, and lasted for fifty minutes longer. Pirogoff's amputation was performed, but the stump became tubercular, and three months later was amputated under chloroform given at her own wish. During chloroform administration she collapsed, and required artificial respiration.

8. H. F., female, aged 69, an epileptic with healed tubercular spondylitis and chronic bronchitis. Injection was made into the second interspace. Anæsthesia was complete in nine minutes, the highest level being two inches above the pubes, and lasted for five hours. Colostomy was done for inoperable cancer of the rectum. She had a whiff of chloroform, as she was nervous, and said she felt the cutting at the upper end of the incision.

9. M. D., female, aged 47, admitted for gangrene of the leg of four weeks' duration, extending up to the knee-joint. The heart beats were irregular and there was a presystolic murmur. She looked moribund when put on the table. Injection into the third interspace. Anæsthesia complete in five minutes, to above the umbilicus, and lasted for over one hour. Disarticulation at the hip-joint was done, and she improved, and expressed herself as feeling better during the operation. Recovery was uneventful.

10. J. L., male, aged 44, with advanced phthisis of both lungs and suppurating tubercular knee-joint. Injection into the third interspace. Anæsthesia complete in eight minutes, up to the umbilicus, and remained so for over one hour. Amputation through the middle of the thigh. Expressed himself after operation as feeling better than he had done for weeks.

11. A. H., male, aged 56, was run over by train, both legs being severed below the knee. Suffering from loss of blood, with profound shock. Injection into third interspace. Anæsthesia complete in eight minutes, and both legs were amputated above the knee. He died eight hours later, but during the operation he did not seem to suffer any further shock.

12. R. W., male, aged 73, weak heart and atheromatous vessels, with emphysema of lungs. Suffering from retention of urine caused by enlarged prostate. Injection into the fourth interspace. Anæsthesia complete in ten minutes, and lasted for two hours, to two inches above the umbilicus. The prostate was enucleated.

13. W. C., male, aged 70, had fractured his femur at the neck, and was suffering from shock. Injection into the third interspace. Anæsthesia complete in eight minutes, up to

umbilicus, and lasted for three hours. The neck was united by screw-nail.

14. C. K., male, aged 21, ununited fracture of femur. Chloroform given at previous operations produced delirium, which lasted till next day. The second space was chosen, and anæsthesia was not complete for seventeen minutes, when it reached to 1½ inches below the umbilicus. It lasted for sixty minutes, though some pain in the heel was complained of while the femur was being wired.

15. J. M., male, aged 70, with chronic bronchitis and large scrotal hernia. The third space was chosen, and in nine minutes anæsthesia had reached two inches above the umbilicus, and lasted for three hours. He complained of pain in the loin when the cord was pulled on, and became faint. A little brandy was administered, and a radical operation completed without further trouble.

16. J. H., male, aged 70, feeble, from septic cystitis, with enlarged prostate. Injection into the third interspace. Anæsthesia complete in seven minutes, to one inch above umbilicus, and remained so for over one hour. Examination through a suprapubic opening showed the whole bladder involved by cancerous infiltration, and a drain was inserted.

17. H. D., female, aged 69, very much wasted and with a very feeble heart. Fracture of the neck of the femur. The needle was passed at the second interspace, but only a drop or two of spinal fluid emerged. Sensation was blunted up to the umbilicus in fifteen minutes, but she required a whiff of chloroform before the nail could be inserted.

18. W. C., male, aged 52, suffering from profound shock following a fall from a great height on to his feet. The left tibia and right os calcis were fractured. Injection into second interspace. Anæsthesia complete in nine minutes, up to two inches above the umbilicus, and lasted for three hours. The bones were wired. He suffered from distension of the abdomen after the operation, and required catheterisation for fourteen days, though sensation in his limbs was perfect.

19. M. P., female, aged 45, hæmophilic and nervous. Had veins excised from one leg a week previously, under chloroform. Sickness had remained for four days. Injection into third interspace took effect in ten minutes, to above the umbilicus. Complained of feeling a little pain towards the end of the operation, which lasted fully an hour, and next day she had some headache and pain in the back, but her appetite was good.

20. A. B., male, aged 61, a thin, prematurely old man, with atheromatous vessels. Fracture of the neck of the femur, which was screw-nailed. The second interspace was injected, and the operation begun seventeen minutes afterwards. The anæsthesia reached to 1½ inches below the umbilicus, and remained complete for some hours. He complained of pain along the sciatic nerve of the sound limb next day.

These cases of spinal anæsthesia have all been done with Barker's glucose solution of stovaine, and this record is presented, not so much to uphold this method against the use of a general anæsthetic, but because in all of them there was present some contra-indication which made a general anæsthetic undesirable. This contra-indication has generally been some cardiac or pulmonary condition, though age, shock, and general wasting have also been included. One or two cases required chloroform, but only the first case failed completely, and this through lack of a proper needle, while No. 17 complained of pain, but she was very nervous, and had suffered for a week before admission. The scorcher position was used whenever possible, as it is easier thus to find the canal, and the third space was chosen, unless some sore or difficulty of entering the canal made another space preferable. For perineal operations, the patient was kept sitting up for two minutes after injection, and in all other cases they were at once placed on the back, and the head and lower part of the body raised, making the dorsal region the most dependent. The extent of the anæsthesia upward was fairly uniform, but unless the spinal fluid flowed freely, it was not so complete nor so rapid in onset. The same supply of stovaine has been used for all the cases, and there seemed to be a falling off of the certainty and efficiency of the anæsthesia in the later cases, which may probably be due to some change in the stovaine after eighteen months. No case has given rise to any anxiety at any time. No. 15 became at one period very faint, but the faintness was not unlike what one sees in many patients when even a slight incision is made, and at the time no one was talking to him to keep his mind occupied. There have been one or two cases of backache, and a small hypodermic of morphia has been given, but only in No. 20 has this pain persisted for any length of time. The duration of the anæsthesia was not observed in all the cases, especially when it persisted after the patient's return to the ward, but it is noted in some as lasting for some hours, and this was mostly in the very elderly patients. No. 18 had some incontin-

ence of fæces and required catheterisation, but this may have been due to some injury to the back sustained when he fell. The accident was "a fall from a scaffold twenty-two feet high on to a load of bricks." Only two of the patients have had twice intraspinous injection, and both preferred it the second time, while case 6 had to have the leg amputated later, and preferred chloroform, under which she almost succumbed, requiring restoratives and artificial respiration on the table.

In the cases chosen for this mode of anæsthetisation, no grave drawbacks to the method have been observed. Some pain in the back is seen to follow lumbar puncture in a certain number of cases, but this happens when puncture is used for diagnostic purposes, and must not be put down to the stovaine, and in some there seemed to be a greater effect produced by the drug than in others. One whole ampul was used in every case, and it is only to be expected that the dose would have to be regulated in some way, to produce uniformity of effect, for idiosyncrasy and bulk have their influence, and the weight of the patients varied from eight to over twelve stones. The average age of the patients was fifty-three years, but six of them had an average age of seventy years.

There seems to be an undoubted place for this method in certain cardiac and respiratory conditions, and in low operations of any magnitude in old people where shock is present at the time or is later sure to be a factor. The injection should be done by the surgeon himself, if uniformity of effect and absence of untoward sequelæ are to be regarded. Spinal anæsthesia in abdominal cases should lead to a more accurate mapping-out of pain distribution, as the patient is able to assist the surgeon in locating the exact seat of pain, when a part or organ just above the anæsthetic area is touched.

Lately, the writer has tried tropacocaine, but with much less satisfaction.

THE PREDISPOSITION TO TUBERCLE IN THE CHILD: ITS NATURE, SIGNS, AND TREATMENT.

By HALLIDAY SUTHERLAND, M.D.(Edin.),

Late President of the Dialectic Society of Edinburgh; some time Pathologist to the Liverpool Hospital for Consumption and Diseases of the Chest; late Assistant, Clinique Mackay, Huelva, Spain; Extra-Assistant Medical Officer, Royal Edinburgh Asylum; Resident Physician, Royal Victoria Hospital.

THE prophylaxis of tubercle in the child, particularly in those children predisposed to the disease, has received all too little attention in these days of educational "systems" and of variegated crusades against tuberculosis. Eustace Smith [1] remarks, "Phthisis is a common disease in the child," and, quite apart from the numbers who die in childhood from various forms of tuberculosis, it is certain that a vast number (50 per cent. according to Schlossman [2]) pass into adult life with the germ latent in their bodies, and are thereby destroyed at some later period, as during the critical years of adolescence, when the death-rate from phthisis is high. That is to say, the infection of the child means the disease in the adult, and the actual amount of infection in childhood may be gathered from the fact that the mortality from tuberculosis is highest during the first ten years of life.

It is probable that the strain thrown on the alimentary system during the years of rapid growth may account for the greater susceptibility of the child to tabes mesenterica than to pulmonary tuberculosis, and, clinically, it is certain that tubercular infection of the mesenteric glands not only may be chronic, but also may be found post-mortem where no symptoms of such infection were present in life. Further, we know that tubercle bacilli may lie latent for years in the living body, and that in animals they proceed from the mesentery to the lung. From these facts we conclude that many children pass from childhood with the bacillus lying latent, ready to attack and destroy in later life when resistance is lowered, either by environment or on some hereditary defect becoming manifest. Quite apart, however, from the question of actual infection in childhood, it is obvious that prophylactic measures in the child will be followed by a diminution of phthisis, firstly, because predisposition will be remedied, and, secondly, the individual rendered stronger when he enters the critical periods of life.

In view of this it is not surprising that the death-rate from phthisis should remain unaffected by any preventative measures, which fail to reach the primary sources of the evil—the predisposition and the infection of the child. Here, as in the question of treatment, we must distinguish between the children of the rich and the children of the poor, and prophylactic treatment for the latter can only be considered in the relation of the State to phthisis.

A child born with a predisposition to tubercle, either on account of this disease in its forebears, or it may be from some more subtle disharmony of heredity, is started in life with definite mental and physical stigmata.

Such children are often undersized, the head appearing large in proportion to the body, and are of poor development. According to Eustace Smith the lungs are small, causing an alteration in the shape of the chest, apparent at the fourth or fifth year, and due to the adaptation of the thorax to its contents. Two varieties are seen. The shoulders may be narrow and sloping, the chest elongated, and the ribs abnormally oblique. Again, the scapulæ may project back like wings—the alar or pterygoid chest—so that the more lateral position of the external borders of the scapulæ gives an appearance of flatness and even broadness to the thorax, whose antero-posterior diameter is diminished, and is greater below than above. The facies of a predisposition to phthisis appears the more marked in the child—silky glossy hair growing well forward on the temples, large eyes and pupils overhung with long eyelashes, full lips, with well-formed nose and malar ridges, and pale complexion. Again, those predisposed to surgical tubercle are coarse and sallow, with dark hair and thick lips. There is the Fairy type and the Mannikin type. Yet more marked than the features is their expression, for as surely as syphilis is manifest by old features on young shoulders, so the taint of tubercle is marked by the expression of thought on a child's face—the face of the predestined or warned.

Some have denied or explained away this facies in other terms than that of a predisposition to tubercle. For my own part, I have seen its significance in English cities and on the Sierras of Spain. Moreover, its reality has been recognised by other arts than that of medicine. On the one hand, Maeterlinck,[3] the apostle of Idealism, has described the minds of such children as he calls "warned" as being more in harmony with the Universal Mind than is the case with the normal individual.

Again, in the Art Gallery of Barcelona, I saw the pictures of a modern Spanish artist, who is well qualified to be the Ibsen of painting. Vice, crime and disease are portrayed with powerful realism, resulting in pictures which could only be hung in Spain. Amid this chamber of horrors was the face of a child with the expression of thought, the typical facies of a predisposition to tubercle, and the artist well knew its significance, for the painting was called "Predestined."

On the other hand, Dr. Leslie Mackenzie,[4] in the course of a paper of equal interest and ability, has advanced the view that the "tubercular diathesis," or "predisposition to phthisis," is in reality the product of undiagnosed or undiagnosable tuberculous disease. To this view I shall shortly refer; but, firstly, a word in defence of those terms "diathesis" and "predisposition," which he has harried from pillar to post in the elaboration of a most entertaining heresy hunt.

Dr. Mackenzie states that when he asks "What evidence is there of a tubercular diathesis or predisposition?" he is answered, "The fact that a person takes tuberculosis," and on that retort he wages war. Now, to my mind, that reply is not accurate, being only a half statement. The evidence of a predisposition to tuberculosis is found in the fact that every human being is infected at one time or another with the tubercle bacillus, but that only a certain number, and chiefly those with the stigmata of the diathesis or predisposition, actually develop the disease. If the tubercle bacillus were the sole cause of tuberculosis the disease would have decimated the world ere now, or, to express it paradoxically, if there were no predisposition all would fall victims to the bacillus. When Dr. Mackenzie attempts to ridicule this argument by stating that if there be a predisposition to tubercle there needs must be a cow-pox and a small-pox diathesis, he adds nothing to his argument, for there is naturally a diathesis to every specific infection, and Life itself is a Predisposition to Disease. When the old clinicians noted a certain body habit associated with tuberculosis they called it the "tuberculous diathesis"—to them it was a clinical entity—and whether to-day we call it diathesis, predisposition, want of resistance, unresistive, or even pre-præ-tuberculous, that entity remains, and it is our business, as Dr. Mackenzie urges, to inquire into its intrinsic nature in the light of modern science. At the same time this is hardly a reason for attacking an historic term, simply because we now question the exact nature of the thing it represents, provided always we may give to it a modern interpretation.

We now ask wherein lies the particular weakness which constitutes a predisposition to tuberculosis. On this point I cite the dictum of Hamilton,[5] and this being an appeal to authority it is but just to state that I quote a teacher who did more than any other in this country to place the teaching of Pathology on a basis of systematised reason and convinced knowledge.

"Most likely the particular vulnerability resides in the epithelial protective coverings of the body being too little resistant, too easily stimulated by external agencies, too readily penetrated by the parasite of the disease. . . . In support of this assertion are to be taken into account certain epithelial manifestations which accompany the tubercular habit, namely, the very dark or very light degree of colour of the hair, the overgrowth of hair in the bushy eyebrows and long eyelashes, and, lastly, the occurrence of a lanugo-like overgrowth in tubercular children along the spine and over the legs. To my mind these all point to an anomaly of the epithelial type which is peculiar to the tubercular habit of body."

A more disputed point arises when one asks from whence comes this predisposition—is it due to the infection of the child before birth, or is it transmitted weakness from the presence of tuberculous disease in the parents? (*Hérédité de graine ou hérédité de terrain.*) Again, is it a true inherited strain, or, as Dr. Mackenzie holds, merely the expression of tuberculous infection after birth? I avoid here all reference to the first two, which I hope to deal with in a later paper on phthisis and marriage.

Hamilton[5] held predisposition to be a true inherited strain, and wrote as follows:—"Where has the inherited strain come from? What is its ancestral history? Can it be generated by vicious surroundings? I question whether it can. No doubt, once in the blood, the particular habit may be fostered by every external agent which tends to deteriorate the natural powers of resistance. But will such external agencies tend to produce a particular colour of hair, a certain narrowness of chest, tallness of stature, and other peculiarities which are distinctive of the tubercular constitution? My conviction is that they will not, and that we must go much further back in the history of the human race to get at the explanation of the matter. My own impression is that these features are the lineal descendants of a variation which took place far back in our history, that the variation has occurred irrespective of surroundings or external agencies, and that its influence has been propagated in the descendants ever since. It

may be a variation which is common to many races, but one which is intensely hereditary."

Accepting this origin of predisposition, I can only further suggest that tuberculosis in the parents favours a throw-back in the offspring along an old inherited strain.

Dr. Mackenzie holds that infection after birth is responsible for "predisposition." If this be so, heredity plays no part whatever in tuberculosis, for the fact that the children of tuberculous parents are specially liable to tubercle would be explained by their increased risks of infection. Now, as one who believes in the ingestion theory and the bovine origin of tuberculosis, and that the vast majority of adults who die of tubercle are infected in infancy and childhood, I ask, "Why does not every child infected with the bacillus develop the predisposition and die of tubercle?" In sick children's hospitals, of those dying of all diseases a large number (38·5 [Comby[6]] to 90 per cent. [Bucharest[7]]) have been found infected with tubercle. Again, it is known that in over 70 per cent. of the lungs of adults dying of other diseases there are found the scars of old tuberculosis. In view of this there must be another factor —the inherited diathesis or predisposition to tubercle.

The mental attitude of such children is often striking, particularly when there coexists with the predisposition to tubercle a neuropathic temperament, for we find a hypersensitivity of the brain not present in the normal child.

Before considering this, however, it were well to trace briefly the sources of the stream of consciousness in the normal child. A frequent commonplace is, "How imaginative children are," and, applied to the normal child, this dog-eared remark is by no means true. Children are not imaginative, for their life and play is but an imitation of things they have seen; they are actors, not dramatists. A child will play for hours with a few chairs in the make-believe they form a train. Take away the chairs and the train disappears into nothing. The stage is cleared, and to resume the play the actor must find new properties. His theatre of life is small, ideas are but dawning, and to call forth his few percepts he must seek the assistance of external things. A child that will fill a train with passengers, speed them across continents, finally wrecking them in a calamitous collision, would stare in wonder were he asked *to think* about a train.

Nor is this strange when we remember the long road the child must travel—from a bundle of reflexes to a "reasoning creature in being"—for at birth the child is the most helpless animal in

the Cosmos. The fossorial wasp leaves its shell to enter at once on the life of a mother it never knew. The foal will stagger to its feet a moment after birth, ready, as in ancient days, to follow the herd. But the child, in whose development is read the history of æons—the amœba to man—has only the power to feel and to move. Every perceived stimuli will call forth movements, some obviously purposive, as the movements of the mouth in sucking, from the inborn memories of the long mammalian line. When these movements are influenced by contact with external objects and their sensory impressions registered on the brain, there follows a sensation of the external world. The child has now the power to distinguish and select, and is capable of conscious action, impossible without the memory of previous experience—as witness the decerebralised frog who lives for years, eating food placed in the mouth, springing when touched, but incapable of volition—for consciousness is but the totality of previous experience. Even simple movements are of slow evolution—at the end of the second month the head can be raised, at the seventh the child can sit up, at one year it can stand.[8] Yet there is something more, for the act of selection is an act of Will, and with this there dawns on the child the World of Idea, where in the absence of the actual object or movement these are recalled by stimulation of the supreme centres by some allied object or movement, resulting in a mental concept or idea. Of this time Maudsley[9] writes, "Transient hallucinations are probably common; when it stretches out its hand and makes futile grasps, it is not always grasping at a real object out of its reach, it is sometimes mocked by a hallucination. The real world and the unreal world not being yet distinguished, its life is as much in the one almost as the other; its natural talk when it is amusing itself is an incoherent prattle in which it does not distinguish its personality from things around it, but speaks of itself in the third person as one of them."

Last, is the power of inducing by an act of will the mental equivalent of abstract thought, and this we term imagination—the absolute creation of thought, the latest and highest attribute of Mind.

From this it is clear that knowledge and imagination are by no means easy to the child, and that concentration, projection and correlation of ideas are only laboriously to be attained.

The child predisposed to tubercle presents a very different mental attitude, for here there is mental activity far in advance of its age and experience. The mental characteristics of such

children are most marked when they also present the neuropathic temperament, and have never been better described than by Maudsley in his masterpiece *The Pathology of Mind*.[9] "Precocious children of highly nervous temperament, especially those predisposed to meningeal tubercle, create imaginary scenes and dramas which they see and deal with as actual events; instead of going to sleep, perhaps, when they go to bed, they lie awake prattling of visionary scenes as if real, and they were taking an active part in them: so much so that their mothers are sometimes alarmed by their delirious chatter and think them light-headed. They are dreaming, so to speak, while wide awake, and with them as with the dreamer the notion is translated instantly into vivid sensory form; all the more easily, first, because there is no store of registered ideas to hold it in by their associate ties, and, secondly, because of its own vividness and intensity.

"Although this sort of delirious dramatisation is most apt to take place at night when outer objects are shut out by the darkness, and quiet reigns around, yet in less degree it may take place in the daytime: then the child cannot be trusted always to distinguish between facts and fancies, may be accused of inventing the story which it tells and perhaps punished as a liar. The truth is, that it does not distinguish between the very vivid images of real things which its intense imaginations are and the perhaps less vivid images which realities appear to it. How can it if the unreal is more real to it than the real?"

These children have strange desires and fancies, unknown to the normal child. Often showing an absolute dread of child companions, they will speedily make friends with their elders, and a child that shrieks with terror at the sight of another child in its house will seize hold of stray dogs in the street without fear and apparently with impunity. Again, a child that is timid to most events in life will wander away from its friends in an ecstasy of delight when the wind is blowing a gale.

At night they are subject to fearsome dreams and visions, not wholly the product of intestinal irritation. Thus Maudsley tells of a scrofulous child, who when awake at night would shriek in a paroxysm of terror because it imagined there was something in the bed with it, and feared the moonlight because "it made so much noise." Such nightmares as these are not the nightmares of childhood—of a physical paralysis in face of impending danger in the form of trains, bulls or robbers—they are the nightmares of the indescribable fear of an unknown calamity, whereat the child will

wake still frightened, trembling, and wet with perspiration. Of these terrors Charles Lamb[10] has written in the telling words of sad sincerity: "Dear little T. H., who of all children has been brought up with the most scrupulous exclusion of every taint of superstition —who was never allowed to hear of goblin or apparition, or scarcely to be told of bad men, or to read or to hear of any distressing story —finds all this world of fear, from which he has been so rigidly excluded *ab extra*, in his own 'thick-coming' fancies; and from his little midnight pillow this nurse-child of optimism will start at shapes, unborrowed of tradition, in sweats to which the reveries of the cell-damned murderer are tranquillity."

Beyrand[11] has shown that night-terrors usually occur during the third hour of sleep, and considers that they are excited by gastro-intestinal irritation, due to improper food or to worms, or from lead-poisoning by the paint off toys or pottery. Soltman[12] found that they existed in anæmic children of neuropathic stocks. Should night-terrors exist, these exciting causes are to be investigated and remedied, but it must be remembered that night-terrors are quite distinct from ordinary nightmares, having been first shown by Debacker[13] to be vivid hallucinations of sight and feeling. It is important to differentiate night-terrors from nightmares. In night-terrors the child is apparently awake, suffering from a vivid and painful hallucination. In nightmare the child is asleep, troubled by a dream. Both conditions are produced by the same causes, the difference being that the causes of slight nightmare in the healthy child produce in neuropathic temperaments a morbid psychical disturbance.

So extreme and grave a clinical picture is by no means present in all children with a predisposition to tubercle. Many such children have no night-terrors, take a delight in play and toys, and yet in these the danger signals are to be read in their build, expression and precocity—as witness one child of six who learnt the alphabet without effort in two days. Further, they seem to be able to understand and to accept situations which are puzzling to their elders. For the portraiture of such a child I know of no better than that in *Dombey and Son.*

The quickness and precocity of these children are in most cases their undoing. So far from being recognised by their parents as the danger signals indicating a life in absolute harmony with nature whereby that lowered vitality which was their birthright may be repaired, their aptitude for knowledge, far beyond their years, is encouraged, their hours are spent in crowded rooms, and

a body once predisposed to tubercle is turned into a veritable hot-house for that disease.

With regard to prophylaxis, we first consider the means of avoiding the infection of the child, and passing the question of intra-uterine transmission of bacilli as possible but extremely improbable; the sources of danger from the start of extra-uterine life are through the respiratory or alimentary systems. As to the former, it is interesting to note that those who uphold the aerogenous infection of the adult should admit its extreme rarity in the child, as proved by the more frequent lesions in the mesentery. Now, as the child inspires the same air as the adult, consequently running the same risk of infection, one were justified to ask if the lungs in childhood have been proved to present a greater resistance to pathogenic organisms than in later life. Were such the case, one would unhesitatingly accept this seeming incongruity in the air-borne tubercle bacillus, but the fact remains that the child is more susceptible to other pulmonary diseases than is the adult. However, as all are agreed that respiratory infection plays but little part in the child, and as the measures against alimentary infection cover this as well, nothing further need here be said. The danger through the alimentary system is by the food, either contaminated at its source or before it reaches the child.

Should phthisis be suspected or apparent in a mother, she must on no account be permitted to nurse the child, for the strain on her system will augment the disease, and the child is subjected to grave risk of infection either at the breast or by the preparation of its food by the mother, or by the contamination of playthings which it is apt to place to its mouth. A healthy wet-nurse should be selected to have entire charge, for there is little doubt that from every point of view the best start in life for any child is to be fed at the breast, as proved by the classical instance of the great Siege of Paris when, although the general mortality was appalling, the infant mortality became extremely low, the mothers being forced to suckle their children. If breast feeding is impossible, and it be decided to rear the child on cow's milk, the purity of this must be assured, which also applies to the feeding of the child after weaning. The ideal condition, possible to a few in the country, is where a special cow, tested every few months by tuberculin, is reserved for the child, and the milk suitably diluted according to age. Otherwise Pasteurised milk should be used, or some of the brands of humanised milk on the market. Scrupulous care is to be taken with the cleaning

of the feeding-bottle, of modern make with no rubber tubing, and no phthisical person should have any hand in the preparation of the child's food, and for the same reason the child is kept apart from phthisical patients.

The child should be brought up entirely in the country, the actual place depending upon circumstances, but in choosing a district the following factors are to be borne in mind:—A dry soil is essential, after which comes sunshine and bracing air. These conditions are most likely to be found along the south-east coast of England, or in the high mountain districts of Scotland and England (not in narrow or low-lying valleys). The house must be well situated, facing south-east, and the ventilation, drains and water in perfect condition. The child should occupy a large, airy room, looking south-east, with the windows open at the top, except in very severe weather, and at night the nurse should occupy an adjacent room.

It is generally believed that mountain districts are of greater value in the prophylaxis of phthisis than climates by the sea. Weber[14] found that of 40 children coming from tuberculous families, but reared in mountain districts, only 4 developed tubercle, under the strain of the unfavourable conditions of later life. Mercier found that of the children of tuberculous parents, only 3 per cent. of those sent to the country died, while 50 per cent. of their brothers and sisters who remained in towns died.

Clothing is to be warm and loose, stays and braces being absent, pure wool underclothing summer and winter, and flannel nightgowns. The food must be simple and wholesome—porridge and milk, fresh eggs and butter, home-made preserves, ripe fruit, small quantities of minced meat or white flesh, fresh fish, potatoes, milk puddings of rice, semolina, tapioca, brown bread, treacle, and milk chocolate as a sweetmeat. Fluids should be fresh milk, buttermilk, "tea and water," "tea and milk," cocoa, and freshly-made lemonade. Meals must be regular—breakfast at 8.30 A.M., light lunch at 11 A.M., dinner at 2 P.M., tea at 6 P.M., and no food given between meals. The maximum amount of sleep is necessary, and the best soporific for the child is to have spent the day in the open air. The kissing of the child by strangers should be prevented, as a dangerous proceeding.

The teeth and bowels demand special attention, as decay in or about the teeth is a frequent cause of digestive troubles. The teeth should be cleaned night and morning, and periodically examined by a dentist. The feverishness which accompanies

even a slight degree of constipation in a child is a clinical indication of how easily the mechanism of assimilation is thrown out of gear. Castor oil is the best carthartic for children, and as an emulsion with marsh mallows is tasteless.

Certain diseases undoubtedly predispose a child to phthisis—measles, whooping-cough, and catarrhal pneumonia—which weaken the system, and by chronic catarrh leave a damaged area of pulmonary tissue, liable to infection by the tubercle bacillus either inspired or carried thither from other parts of the body by the lymphatics. Enlarged tonsils in a state of chronic inflammation are said to offer a good absorbing surface to the tubercle bacillus, and to be associated with glands in the neck. When present they should be removed at once, and the mental and physical results of the operation are remarkable.

Catarrhal diseases of the respiratory system are to be avoided by hardening the child with a life in the open air, encouraging all amusements in which this is essential, and by chest exercises *in moderation*. The liability to chill is obviated by educating the skin to react to changes of temperature, and to this end the cold douche is useful. The child should be sponged with warm water every morning—in front of a fire in winter, in sunlight in summer—followed by a cold douche 65° F. to 70° F., after which it is rapidly dried with a bath towel thrown around it. If the skin appears blue and cold, and the "red glow" absent, the water has been too cold.

Too much attention cannot be given to the selection of a suitable nurse, for the child's education begins at the breast, and the nurse chosen should be a capable woman, of kindly disposition and strong character. Precocity in the child must be checked, and a regular life and healthy ideas will do much to prevent night-terrors.

During the winter months the child may be given tonics, and of these the simplest are the best, as in children there is no question of stimulating worn-out tissues, but of assisting the natural processes of assimilation, and for this purpose malt extract or emulsion of cod liver oil combined with phosphates or malt are sufficient. A drug which ensures the regular functioning of the excretory systems is sulphur. In the Highlands of Scotland it was a routine practice to give children once a week a tablespoonful of a confection of sulphur, soda and treacle, a mixture by no means unpleasant to take, and which undoubtedly acts as a prophylactic against many ailments in the child, being further credited with

ensuring clear complexions. I consider it an excellent practice to give a tablespoonful of this mixture to young children once a week.

The child should not be sent to school before the age of eight, when hours of study and exercise are to be carefully regulated. Later on, for boys, a public school course will ensure a powerful physique, and the question of a profession, avoiding those for which long hours of indoor study are necessary, demands careful thought. The learned professions, especially Medicine, should be excluded, and probably the Navy, as a calling, offers the healthiest life.

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OBITUARY.

WILLIAM WOTHERSPOON IRELAND, M.D.

Dr. Ireland, who was so familiar a figure at the meetings of the Edinburgh Medical Societies, and so well known through his writings, died at his home in Musselburgh on the 17th May 1909, at the age of 76. He was the son of a publisher in Edinburgh, studied in the University there and in Paris, and entered the East India Company's services as assistant-surgeon shortly before the Mutiny broke out. During the Mutiny, being stationed at Delhi, when doing his duty like a hero, he was shot in the head through one eye, and the bullet remained in his brain during the rest of his life. It was a year before he could leave his bed, three years before he could undertake the voyage home, and several years more before he could undertake further professional work. From the beginning Dr. Ireland showed a capacity for literature, general and professional. He wrote the *History of the Siege of Delhi* in 1861, and ever since then has been writing or translating almost continuously. Few men in our profession knew its literature so well. He turned his attention to mental disease after he was strong enough for work, and was appointed Medical Superintendent of the Larbert Institution for Imbecile Children. His name is best known in connection with the two lines he especially took up. The one was idiocy and imbecility, and the other was the application of medico-psychology and studies in heredity, to the elucidation of the lives of certain men who have made a name in history, but who showed marked mental peculiarities, good and bad, and many of whom had a bad mental heredity. His *Idiocy and Imbecility*, changed in title in its second edition to *Mental Affections of Children*, has been our standard work in English on that subject since it came out in 1900. It is a book that was carefully and honestly written ; it covers the whole ground he treats of, and its appreciation is shown by the fact that it has passed through two editions, the second greatly enlarged. The two books, in which his hereditary studies were applied to the problems of history, were the *Blot on the Brain* and *Through the Ivory Gate*. In those books, which are of great general interest, he treats of the Claudian-Julian family, Nero, Messalina, Caligula, &c., as illustrating the effect of unchecked power on the characters of men. He also wrote an account of the Royal Family of Spain, which has great psychological and psychiatric interest. Royal families form the best field for studies in human heredity, because their members are necessarily well known. He also analysed the characters and work of Francis Xavier, Joan of Arc, Louis II. of Bavaria ; Guiteau the assassin of President Garfield ; Riel, the half-breed Canadian ; Theodore of Abyssinia, Luther, Ivan the Terrible, Paul of Russia, and one or two Eastern Sultans. His

memoir of Swedenborg is ample and appreciative. Ireland seemed to revel in the borderland between sanity and insanity, and undoubtedly stimulated inquiry into the part which heredity and brain constitution has played in history, so much neglected by historians. He also published studies of Torquato Tasso, Auguste Comte, and Friedrich Nietzsche, from the literary and psychological point of view, and wrote a biography of Sir H. Vane the younger. Showing the range of his acquirements and tastes, he wrote on the "Effects of the Resinous Vapours of the Coniferæ on the Climate of Madeira," and on the "Arithmetical Faculty in Cerebral Disease." His translations from the German and Italian, for this and other journals, were very numerous. All he wrote was interesting and instructive. He did not cultivate brilliancy of style, but rather that of a solid and clear exposition. He was made a member of medical societies in Russia and Italy.

On the occasion of the jubilee of his graduation he was the recipient of an illuminated address and presentation by a large number of his professional brethren, with whom he was always a favourite. He had an individuality in his appearance, laugh, walk, and character. He was never carried away by new theories at once, and in fact, even as to facts that professed to be new, he always took the position that they would have to be confirmed before they took their part in medical science. Showing that he could write to the point, one of his books was excluded from circulation in Russia because he had painted too true a picture of Ivan the Terrible in the *Blot on the Brain*. Many of his professional brethren, if they wanted a reference in regard to mental deficiency or mental disease, instinctively went to Ireland for it. It was said in the address presented to him on the 4th March 1905 by the then President of the College of Physicians, Edinburgh,—"Above all those merits, your personal character, combining modesty and genial humour, earnestness and truthfulness, have won our respect and affection. We desire most cordially to express to you our wishes for a long and happy life, and still further usefulness. We believe that you will always enjoy the happiness of the man who 'keeps himself simple, good, sincere, grave, unaffected, a friend of justice, considerate, and strenuous in duty.'" In reply, Dr. Ireland said, amongst other things,—"He was not one of those who were in doubt as to life being worth living; he would gladly live his life over again, and he had found that his worst experiences had always taught him something." This from a man of seventy-two, whose first career had been blasted, who was blind in one eye, carried a bullet in his brain, had just enough money to live on, and had many domestic sorrows in life, shows a spirit which we all might envy. His striking individuality will be much missed in Edinburgh medical circles, and at the meetings of the Medico-Psychological Association.

J. S. C.

CHARLES KENNEDY, M.D.(Edin.).

A GLOOM was cast over the Newington district of Edinburgh when it became known that Dr. Charles Kennedy had died with appalling suddenness at an early hour on Monday morning, 17th May. Apparently in his usual health on the Sunday, it was, however, known to his more intimate medical friends, and to himself, that he was suffering from a dilated heart, brought on by repeated attacks of influenza, and it was quite evident that a sudden attack of syncope was the cause of his lamented death.

Dr. Kennedy had a distinguished career as a student in Edinburgh University, gaining medals for anatomy, general pathology and surgery.

He graduated M.B., C.M. in 1881, and shortly afterwards became house physician to the late Sir Douglas Maclagan. After relinquishing his post at the Royal Infirmary he proceeded to Paris, Vienna and Prague, spending a considerable time at each of these great medical centres, and gaining much valuable experience which stood him in good stead in after years.

From Prague Dr. Kennedy was summoned to take up the duties of demonstrator to Professor Greenfield, and whilst holding that important position he collected the materials for his thesis entitled "The Human Omentum: a Study of the Process of Growth and Disease as seen in the Great Omentum in Man," for which he was awarded a gold medal when the degree of M.D. was conferred upon him in 1885. In this same year he started in practice in the south side of Edinburgh, and for the past 24 years has been a prominent man in the district. Dr. Kennedy succeeded in building up a practice which, if not as extensive as many in town, was comprised of people who were devoted to him personally, and to whom his word on medical matters was always law. He took a keen interest in the ambulance movement from its initiation, and was much sought after both as an examiner and a lecturer. So late as the Friday preceding the day of his death he was elected chairman of the southern division of the British Medical Association.

An earnest, hard-working, honest practitioner, whose practice was founded on a sound scientific basis, Dr. Kennedy had many interests outside his own profession. He had been a member of Mortonhall Golf Club, and was at one time a keen golfer. As a member of the Old Edinburgh Chess Club he played the game with more than average skill. He was also a member of the Rhymers' Club, and of the Pen and Pencil Club. Dr. Kennedy along with the other members of his distinguished family was passionately fond of music as an art. He had a beautiful voice, and it was always a delight to hear him sing the old Scots songs in his charmingly refined and pawky way.

To his friends his loss is irreparable. Loyal, warm-hearted, generous

almost to a fault, and self-sacrificing to a degree, those who knew him best loved him most, and to the writer of this very inadequate tribute, and to many others outside his own family circle, the world seems empty indeed without Charley Kennedy.

The large number of members of the medical profession and of the general public that attended Dr. Kennedy's funeral on Wednesday was a living tribute to the worth of the man, and an indication of the amount of sympathy extended to his widow and family.

E. P.

MEETINGS OF SOCIETIES.

Edinburgh Medico-Chirurgical Society.

THE seventh ordinary meeting was held on 5th May. M. Metchnikoff was elected an honorary member, and Professors C. F. Martin (Montreal) and L. F. Barker (Baltimore) were elected corresponding members.

Dr. Byrom Bramwell showed a case of scleroderma which had improved under treatment by fibrolysin. Dr. Bramwell remarked upon the occurrence of scleroderma almost exclusively in stone-masons, and referred to the fact that in the case shown as well as in others he had noticed a rise of temperature following the second and subsequent injections of fibrolysin. Dr. Bramwell also showed a little girl who had suffered from functional nervous disease following the bite of a dog. A complete cure followed treatment by isolation, faradism and hypodermic injections of water.

Dr. Norman Walker showed (1) a case of acanthosis nigricans. He remarked that most of the recorded cases had been associated with internal malignant disease, but that no such symptoms were present in the case shown. (2) A case of pityriasis rubra pilaris which had improved under prolonged treatment by hypodermic injections of soamin. (3) A case of lichen scrofulosorum. (4) Cases of lupus treated by the local application of tuberculin. It was employed in the form of ointment, consisting of 5 per cent. of Koch's old tuberculin in lanoline or vaseline. Considerable local reaction wider than the area obviously diseased took place, but the temperature was not affected. Great improvement with disappearance of fibrous thickening followed. (5) A remarkable tubercular lesion of the skin which occurred in a girl after an axillary abscess had been opened. A painful ulcerative process had spread all over the chest, healing as it went, and had given rise to an appearance as if the skin had been grafted.

Professor Caird showed (1) a case after ligature of the subclavian artery for axillary aneurism. (2) A man after operation for strangulation of the jejunum by a fibrous tissue band. (3) A man showing a condition resembling elephantiasis of the leg after passive congestion had been applied in the treatment of a tubercular knee. The knee had been cured. There were enlarged glands in the region of the saphenous opening of unknown duration.

Mr. Stiles showed (1) a patient after pylorectomy for chronic ulcer of the stomach. Neither at the operation nor after the pyloric portion had been removed and slit up was it possible to say whether the ulcer was simple or malignant. The microscope showed that the ulcer had

become carcinomatous. (2) A patient after operation for extensive tuberculous disease of the glands on both sides of the neck.

Mr Struthers showed a child who had exhibited clonic spasms on the right side after a head injury. The left motor area was trephined, the only point noticed being the escape of a very large amount of cerebro-spinal fluid.

Mr. Cotterill demonstrated Burgess's apparatus for irrigating the abdomen.

The following specimens were shown:—By Mr. J. M. Cotterill—(1) Hirschsprung's disease (with photos); (2) two specimens of tuberculous testis; (3) syphilitic testis; (4) cancer of penis; (5) two specimens from cases of cholecystectomy for calculous cholecystitis; (6) large pigmented mole from child's back; (7) neoplasm of appendix; (8) appendix adherent to sac of hernia. By Dr. Alexander Bruce—(1) Multiple acute aortic aneurisms, resulting from vegetative endarteritis; (2) acute hæmorrhagic encephalitis; (3) (with Dr. George Mackay) cystic tumour of the pituitary gland, which had caused bitemporal hemianopsia (with photographs); (4) large sarcomatous tumour of the pituitary body. By Mr. Stiles—(1) Naked-eye and microscopic preparations from a chronic ulcer of the stomach which had become malignant (patient exhibited); (2) glands removed from left side of neck of patient exhibited. The specimen showed all the various groups of glands which go to complete the deep cervical chain.

Dr. J. S. Fraser read a paper on the "Histology of Accessory Sinus Suppuration."

Edinburgh Obstetrical Society.

THE sixth meeting of the session was held at 5 St. Andrew Square on Wednesday, 12th May 1909; Professor Stephenson, President, occupied the chair.

Specimens were shown by Dr. Haultain, Dr. J. W. Ballantyne, Dr. W. Fordyce, Dr. John M'Gibbon and Dr. J. W. Keay.

Dr. Munro Kerr read a paper on the "Complications and Difficulties in a Series of 250 Ovariotomies." He first of all drew attention to the mortality, which was 4·4 per cent. compared with 2 per cent. in his series of 150 hysterectomies for fibroid tumours of the uterus. In this connection he referred to the greater difficulties and danger associated with ovariotomy compared with hysterectomy, and mentioned the reasons why this was so.

Dr. Kerr then referred to the cases where there had been intestinal adhesions—55 in all. In 3 of these the bowel was opened into, and in one a portion of gut, a foot and a half in length, had to be resected.

He described in some detail this case, which had an uninterrupted recovery.

He then referred to the dangers which follow injury to the rectum, and pointed out how serious a complication this was.

He subsequently referred to 2 cases of abscess of the ovary, both of which had developed after a parturition some months previously. The patients were very seriously ill when operated upon, and both died. Streptococci were the organisms found in both cases.

Dr. Kerr then considered such complications as—

Rupture of the tumour (3 cases).

Torsion of the pedicle (14 cases).

Ovariotomy in the aged (3 cases), one 81 years of age.

Fibro-myomata associated with large ovarian tumours (10 cases).

The difficulties in dealing with broad ligament cysts were then considered.

In malignant tumours of the ovaries the removal of the uterus with the tumours was advocated.

Cases in which apendectomy and cholocystectomy were also performed were briefly detailed.

Finally, Dr. Kerr referred to details in technique. He mentioned the methods he employed for sterilising the hands, stitching of the abdominal wound, drainage, the importance of rubber gloves, and the preparation of cat-gut.

In regard to the after-treatment, he mentioned the beneficial results of washing out the stomach when vomiting is persistent, and the good effects which follow continuous saline rectal infusion.

Professor Sir Halliday Croom read a paper on his "Experience of Scopolamine-Morphine Narcosis in Labour, based upon 63 Cases in Private and in Hospital." He found that doses of $\frac{1}{200}$ gr. of scopolamine and less were uneven and unsatisfactory in their effects. He believed that the best dose was $\frac{1}{100}$ gr. of scopolamine with $\frac{1}{6}$ gr. of morphine. He gave the drug usually towards the end of the first stage of labour when the pains were coming regularly every few minutes. Occasionally a second dose of $\frac{1}{200}$ gr. of scopolamine was necessary, but he found it better not to repeat the morphine. With these doses the pain of the uterine contractions was markedly diminished, and in some cases abolished altogether, and the patients slept soundly in the intervals between pains and after the completion of labour. Further, in most cases the memory of the pains was strikingly blurred, and many of the patients awoke with no recollection whatever of their labours. He had found no ill effects from the drugs upon the mothers, except a faint tendency to post-partum hæmorrhage, but occasionally the children were born very sleepy, and required revival. In no case was the child's life sacrificed, and in no case was the narcosis of the child a serious complication. He believed that the

treatment was most suited for nervous primiparæ, and particularly in private practice. He emphasised the necessity of using the drug in a freshly prepared form.

Glasgow Medico-Chirurgical Society.

FRIDAY, 7th May 1909. Dr. Walker Downie in the chair.

Dr. W. R. Jack read notes of a case of tuberculosis of the bladder treated by vaccine therapy. By cystoscopic examination tuberculous ulceration was observed in the region of the trigone, and both ureteral orifices were inflamed. There was pain in the right renal region, and the right kidney was removed with the whole of the corresponding ureter. The kidney contained a calculus, and there were numerous tubercular areas in the cortex, while the ureter was swollen and gelatinous. The ulceration continued in the trigone, but the left ureteral orifice became normal. There was frequency of and pain on micturition, and the urine showed tubercle bacilli in abundance. Injections of tuberculin (latest form) were begun. There was no constitutional disturbance and no fever, and the frequency of micturition and pain at once diminished, while soon the tubercle bacilli were found with difficulty. Pus however persisted, and on further examination almost a pure culture of B. coli was obtained. Injections of a vaccine prepared from this organism produced rapid improvement in the symptoms, and the last report from the patient states that she has no complaint.

Dr. Walker Downie (*a*) read notes of a case of epithelioma of the naso-pharynx treated by the application of radium. The growth was proceeding from the upper wall of the naso-pharynx. Histological examination confirmed the diagnosis. Operation was refused. As the case occurred four years ago, little definite was known about the application, but it was tried on the off-chance of its doing good. The tube was inserted into the inferior meatus for fifteen minutes at first, and for increasing periods up to one hour on succeeding days. The growth completely disappeared, leaving a smooth-walled space. The patient, however, died from intra-cranial involvement; (*b*) showed drawings of three cases of primary epithelioma of the avula. One case remained free for ten years, when he returned with large inoperable malignant growth in the neck; while another case returned four years after primary operation with a scirrhus of the tonsil.

Dr. Albert A. Gray showed stereograms illustrating normal and pathological conditions in the middle and inner ear.

Dr. Wyllie Nicol showed a new form of test tube specially adapted for the pouring of strong fluids down the side. The mouth of the tube was placed obliquely and not transversely as in the usual form.

RECENT LITERATURE.

CRITICAL SUMMARIES AND ABSTRACTS.

MEDICINE.

By W. T. RITCHIE, M.D., F.R.C.P.,
Assistant (Clinical) Pathologist, The Royal Infirmary.

The Nature of Persistent Cardiac Irregularity.

Persistent cardiac arrhythmia, continual irregularity, or the "nodal rhythm," is admittedly one of the most striking forms of irregularity of the heart's action, and yet there is very little definite knowledge as to its real nature. We are aware that while this form of cardiac arrhythmia may appear, at first, in paroxysmal form, it subsequently becomes permanent. Further, we know that although, as an indication of cardiac enfeeblement, it may be due to a variety of causes, it is undoubtedly most often observed in the late stages of mitral disease, and in the senile heart which presents other signs of cardiac failure. In the study of this interesting condition, much recent research from the clinical, experimental, anatomical, and histological standpoints has been carried out, and although much information is still lacking, it may be useful to give a brief account of our present knowledge of the subject.

There is a general consensus of opinion that Mackenzie is correct in believing that in cases of persistent irregularity the normal sequence of the heart's contraction no longer prevails. Either the ventricles contract alone, or the ventricles contract simultaneously with the auricles. Mackenzie points out that in this form of irregularity all the signs of auricular systole that might previously have been present disappear. Such signs are the auricular wave in the jugular pulse-tracings, and the same wave in tracings from the apex beat and liver pulse; and further, the presystolic murmurs developed at the mitral and tricuspid orifices. In his earlier writings Mackenzie concluded that in cases of persistent irregularity the auricles were paralysed, and Gerhardt likewise spoke of them as failing to respond. But more recently, Mackenzie finds, on post-mortem examination of such cases, that the auricles, although much dilated, may present hypertrophy of certain of their muscle fibres, such as those of the tænia terminalis. There is therefore reason to suppose that the auricles were not really paralysed. And, further, Mackenzie believes that the double systolic pulse wave in the jugular vein of such cases is a compound wave: its first part being the evidence of an auricular contraction at the same

time as the ventricles are in systole, while its second portion is the movement corresponding to the ventricular wave. The question as to whether the auricles do contract at all in these cases, or whether they are inactive, is again brought prominently forward by Hering's researches. He examined two cases of persistent irregularity by means of Einthoven's string galvanometer. The records presented no evidence of auricular contraction, and Hering therefore concludes that the auricles had either contracted absolutely simultaneously with the ventricles or had failed to give any evidence of contraction. But whichever of these alternative conclusions we accept—and apparently one or other must be correct—neither affords a wholly satisfactory explanation of the exciting cause and nature of the irregularity.

The theory which best explains the condition, and which consequently meets with most acceptance at the present time, is that which was first propounded by Wenckebach. His clinical and anatomical researches led him to the conclusion that persistent irregularity is a condition analogous to that produced experimentally by the application of the first Stannius's ligature at the sino-auricular junction of the heart. The important argument in favour of this theory is, that after the application of this ligature the auricular contraction does not precede the ventricular, but, on the contrary, the auricles contract simultaneously with the ventricles. Further experimental evidence in support of this theory is furnished by the recent researches of Lohmann. He destroyed the tissues of the superior vena cava by the application of formalin, and observed that the auricles and ventricles then contracted simultaneously. This experiment has been repeated by Hering, who studied the changes by means of Einthoven's galvanometer. In the course of the experiment the interval between the auricular and the ventricular contraction became gradually lessened, until the auricles and ventricles beat simultaneously, and eventually the contraction of the ventricles somewhat preceded that of the auricles. Further, Cushny's tracings, which are reproduced by Hay in his recent monograph, show that in the dog's heart under the influence of aconitine the ventricular systole preceded that of the auricle by about one-tenth of a second, and persisted after the auricular systole had terminated. The auricle and ventricle had therefore contracted simultaneously.

Thus there is definite evidence, from the experimental standpoint, that the auricles may contract simultaneously with the ventricles, and the clinical and instrumental evidence obtainable from cases of persistent irregularity points in the same direction. Does the theory that persistent irregularity is a condition analogous to that following the first Stannius's ligature obtain any support from anatomical and histological research?

It is believed that the normal stimulus for the heart's contraction originates in the lower part of the superior vena cava at its junction

with the right auricle. It is there that the sino-auricular node of Keith and Flack is situated, and the stimulus for contraction passes thence to the right auricle by means of muscle or nerve fibres, or possibly by means of the well-defined muscle bundle which crosses the sulcus between the superior vena cava and the right auricle, and which is often spoken of as Wenckebach's bundle. What evidence is there of destruction or disease of the tissues at the root of the superior vena cava, or of changes which might have completely obstructed the transmission of stimuli from the vein to the auricle? It must be admitted that the anatomical and histological evidence is as yet scanty and inconclusive. Mackenzie suggests that in advanced cases of mitral stenosis the distension of the auricles results in a break in the continuity of the conducting fibres below the sino-auricular node, the transmission of the normal stimuli being therefore interfered with. Further evidence is brought forward by Schönberg, who has recently examined the hearts of eleven cases of persistent irregularity. He found that the sino-auricular bundle (Wenckebach's bundle) and the tissues around it were markedly infiltrated with lymphocytes. In some cases the infiltration had involved the adjacent groups of ganglion cells, and in two instances the musculature at the root of the superior vena cava was largely replaced by dense fibrous tissue. The morbid changes in the superior vena cava are also discussed in a recent paper by Koch, but it does not appear that he made any histological investigation of the heart in persistent irregularity.

But, even although it be granted that persistent irregularity is due to a lesion affecting the superior vena cava or right auricle, and that the condition is analogous to that produced by the first Stannius's ligature, we are still uncertain regarding the site where the stimulus for the heart's contraction arises. Mackenzie believes that in persistent irregularity the stimulus arises in the auriculo-ventricular node—hence the term "nodal rhythm." He bases this opinion partly on the peculiar characters of the jugular pulse wave, as already described, and also on the fact that the nodal tissue in such cases has been found with an increased number of nuclei and an increase in the fibrous tissue. This evidence of degeneration implies greater irritability, and the tissue of the auriculo-ventricular node becoming more excitable than that of the sino-auricular node, the stimulus for the heart's contraction proceeds from the former. Hering, however, thinks that the heart in persistent irregularity is beating in response to a stimulus from either the sinus or the auricle, and he maintains that, even although there be a lesion analogous to the first Stannius's ligature, this will not fully explain the irregularity of the heart's action.

There is yet another explanation of persistent irregularity. It is one which is founded on the experimental observation that when a state of auricular fibrillation is induced, the ventricular rhythm may

become highly irregular. The theory that auricular fibrillation may be the cause of persistent irregularity of the heart was first advanced by Cushny and Edmunds, and almost at the same time by Léon Fredericq. Both Wenckebach and Hering regard it as a reasonable explanation, and they both believe that certain small and frequent waves in tracings from the jugular vein may quite well represent fibrillar contractions of the right auricle. Mackenzie, however, says that those little waves which he formerly was disposed to regard as due to fibrillation of the auricles are merely instrumental errors.

Hirschfelder considers that some cases of true paroxysmal tachycardia are probably due to auricular fibrillation. He refers more especially to those cases where the onset of the paroxysm is sudden and where the venous pulse is of the ventricular type. Such attacks closely resemble the experimental tachycardias which he observed when the auricles, under the influence of faradic stimulation, passed into a state of fibrillation. In these experiments it was found that the heart's rhythm, in the intervals between the attacks, might be quite irregular, and that the auricles and ventricles might contract almost absolutely simultaneously, just as we know they do in persistent irregularity and in many cases of paroxysmal tachycardia.

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SURGERY.

By ALEXANDER MILES, M.D., F.R.C.S.,
Assistant-Surgeon, The Royal Infirmary;
and
JAMES LOCHHEAD, M.D.,
Clinical Assistant, Lock Wards, Royal Infirmary.

Wassermann's Reaction in Syphilis.

The clinical value of Wassermann's reaction in the diagnosis of syphilis and para-syphilitic lesions is as yet difficult to appraise. More recent investigations undoubtedly show to better advantage than the earlier work of Neisser, Bruck and others. Butler (*New York Med. Journ.*, 30th January, 1909) examined ten cases of primary syphilis, obtaining a positive reaction in all; thirty-six in the secondary stage, with thirty-four positive; thirty-one in the tertiary stage, with twenty-nine positive. Such a high percentage of successes leads one to look for a special factor in the failures. There is presumably in these cases an absence of the antibody in the patient's blood. On certain occasions this appears to be the result of treatment, a positive reaction becoming negative after a course of mercury, but the exact significance of the change is not yet understood. In para-syphilitic lesions, just as there is a certain percentage of cases with no history or sign of syphilis, so a certain number fail to give the reaction—fourteen out of fifty-five (Butler).

In congenital syphilis, the reaction is almost invariably positive when manifestations are present. Butler mentions one negative result as being in accordance with Profeta's law, in a new-born infant whose mother was infected during the pregnancy. Such a conclusion is, however, unwarranted till we know that the specific amboceptor is formed in the fœtus *in utero*. It is worthy of note that a suckling infant may obtain the amboceptor from the milk of an infected wet-nurse, but it is not known whether it is absorbed unchanged by the intestinal mucosa and passed on to the blood.

Bætzner, an assistant of Bier, has examined the blood-serum of 125 surgical patients (*Münch. med. Woch.*, No. 7, 1909). In twenty-five there was no history nor sign of syphilis, and the author describes these in detail. They consisted of cases in which an exact diagnosis

was impossible between syphilis on the one hand and tubercle, malignant disease, &c., on the other. Thus a supposed inflammatory trismus with infiltration of the masseter muscle was proved to be a syphilitic myositis by a positive reaction and the result of mercurial treatment. An alleged gonorrhœal arthritis turned out to be syphilitic, and yielded to the appropriate treatment. In the same way he recognised syphilitic ostitis and osteomyelitis of the radius, ulna, and metacarpals in cases which had been treated for months as tuberculous. A suspected sarcoma of the parotid was again greatly improved by mercurial treatment.

As we might expect, antisyphilitic treatment often fails even when the reaction is positive, indicating merely the presence of a non-syphilitic lesion in a syphilitic subject. On the other hand, a negative result may be of the greatest benefit in excluding syphilis where otherwise valuable time might be lost in trying the effect of mercury and iodides.

Finally, the reaction has sometimes been obtained in non-syphilitic subjects, and for these Wassermann offers the explanation that they are due to a different spirillus, and the reaction does not differentiate between such. Butler obtained three positive results in cases of noma, where, as already known, a spirillar infection may exist. In addition, he obtained slight inhibition of hæmolysis in four cases of scarlet fever of which the infecting agent is still unknown. The difficulty of excluding latent syphilis in any and every case complicates the discussion of these results.

Headache in Syphilis.

"When a severe headache does not yield to ordinary remedies and lasts more than a fortnight, with rare exceptions it is due to syphilis." Such is the dictum of Horand (*Lyon Méd.*, 14th February 1909) after many years of experience. In illustration he records three interesting cases. In one, in which there was no history of syphilis, the patient complained of a continuous headache, as if the forehead was constricted by a tight band. In a second the headache had lasted seven months, in spite of many anti-neuralgic remedies. There were frequent paroxysms, especially at night, which forced him to hold his head between his hands. The third was a known syphilitic, and had had headaches for three years. In all, the pain quickly disappeared with specific treatment. In a recent infection the cause is apparent, but in latent or ignored syphilis it is apt to be put down to gastritis or neurasthenia. It is well to think of cerebral or cranial syphilis in severe and persistent headache.

Alleged Amblyopia from Mercurial Intoxication.

Coronat (*Lyon Méd.*, 24th January 1909) records a case of amblyopia which he ascribes to over-treatment with mercury. The essential

facts were as follows:—A doctor contracted a primary lesion on the eyelid in 1896, and underwent mercurial treatment by pills for ten years. In 1905 a weakness of vision set in in the left eye and went on to blindness. In 1907 the same symptoms began in the right eye. Mercury was stopped and injections of atoxyl were substituted. The vision quickly returned to normal. Coronat says the amblyopia was due to mercury because the first sign was a central scotoma, as in other forms of toxic amblyopia, while, later, the vision was disturbed more than the ophthalmoscopic changes indicated, while in tabetic amblyopia the opposite is the rule. The evidence is weak. In the first place, mercurial poisoning in workmen has never, so far as we know, been signalised by optic atrophy. Occasionally, though exceptionally, the central scotoma is found in tabes, and the other point is largely a matter of opinion. More probably the lesion belonged to the class of para-syphilitic manifestations in which treatment by mercurial pills is notoriously futile. The very fact that the injection of atoxyl was beneficial leads us to think that more vigorous mercurial treatment, by inunction or injection, would have led to as great an improvement.

The Prostate and Seminal Vesicles in Gonorrhœa.

Wolbarst (*Internat. Journ. of Surg.*, February 1909) says: "The secret of intractable chronic gonorrhœa lies in the prostate and adnexa." When the disease has lasted some time, it extends beyond the mucosa of the posterior urethra and attacks the ejaculatory ducts, seminal vesicles, prostate and epididymis. The recognition of this fact brings into prominence the desirability of rectal examination in every case of gonorrhœa. Even in the acute stage there is, according to Huhner (*New York Med. Journ.*, 23rd January 1909), almost invariably an enlargement of the prostate, which is, however, not inflammatory but reflex. This is often mistaken for an actual involvement of the gland, and the special method of treatment is apt to be condemned. In chronic cases, we may determine by rectal examination the size and consistency of the prostate, and make out any area of softening or locate specially tender spots. The vesicles are not normally palpable, but if inflamed they form a more or less sensitive mass, usually the size of a hazel-nut, hanging on one or both sides of the prostate.

By massage with the finger in the rectum some of the secretion may be expressed at the meatus, and the demonstration of pus cells in it is a definite sign, and often the only one, of its involvement. The search for gonococci is often unsuccessful, and must be frequently repeated before one can say that a patient is cured. After massage, the first urine is usually clouded with pus, and there are often large

floating masses of glandular detritus. Any special attack of pain or tenesmus or a sudden discharge of pus is usually attributed to a prostatic abscess, but it is quite as likely to be from the seminal vesicles, whose secretion is intermingled with the prostatic when obtained by massage. Fitch (*Internat. Journ. of Surg.*, February 1909) goes so far as to say that "pus-tubes are quite as common in the male as in the female." Though this is somewhat exaggerated, it is certain that the presence of vesiculitis is often undetected.

In chronic cases the best treatment is massage once a week for two months or so. At the first "stripping" as much as a dram of pus may be evacuated from the seminal vesicles, and this procedure should be followed up by intra-vesical irrigation. In more acute cases, especially with extensions to the perivesicular connective tissue, massage is contra-indicated on account of the danger of setting up epididymitis or arthritis. In these cases it is advisable to reach the abscess by a perineal incision, and wash out and pack the cavity. Various incisions have been suggested, but Senn's inverted **Y** incision is perhaps the best. The vertical part is in the middle line of the perineum and goes down to the urethra, but not into it. The limbs reach to a point midway between the anus and the tuber ischii.

Gonorrhœal Epididymitis.

Mention has been made above to the risk of lighting up an epididymitis after prostatic massage. Ernst (*Berlin. klin. Woch.*, 8th March 1909) draws attention to a similar danger as the result of instrumental interference. The rapidity of onset is often surprising. Oppenheim and Löw (*Virchow's Archiv.*, 1905) report a case from Finger's clinique in which two hours after a posterior injection an inflammatory swelling of the globus minor occurred. In such a case a continuous spread of the infection is out of the question, and the absence of changes in the deeper layers of the vas deferens argue against a lymphatic spread. The rapidity is, however, explained by the investigations of Oppenheim and Löw, which prove that mechanical stimulation of the colliculus seminalis in animals, especially when it is hypersensitive, produces reflex antiperistaltic waves of the vas deferens, travelling from the bottom of the seminal vesicle to the epididymis. These waves can carry gonococci from the posterior urethra right to the globus minor. For this reason Ernst advises the avoidance of instruments in cases with severe symptoms, and in the subacute and chronic stages the stoppage of corrosive injections, which render the colliculus seminalis more irritable.

OBSTETRICS.

By R. G. M'KERRON, M.A., M.D.,
Physician to the Maternity Hospital, Aberdeen.

Anæsthesia in Midwifery Practice.

The employment of anæsthesia in midwifery practice is a question of no little importance, and one which appeals in a special manner to the general practitioner who so often has to undertake obstetric operations, it may be of the most serious character, with little warning and without the possibility of obtaining assistance.

Much has recently been written on the subject of surgical anæsthesia, but the obstetric aspects of the question have been comparatively neglected. No doubt, during labour an anæsthetic must be administered in the same general manner and with the same precautions as in surgical cases, yet there are special circumstances relating to obstetric anæsthesia which deserve special consideration. There are still questions in regard to its use on which opinion is divided.

As to the necessity for anæsthesia in obstetric operations there is general agreement. It is in regard to the employment of an anæsthetic in normal labour that opinions differ and that a lack of agreement will be found among practitioners. To a large extent the explanation is to be found in the neglect of this subject by obstetric writers. Since the vigorous controversy which followed the introduction by Sir J. Y. Simpson of chloroform in midwifery practice, and in which there is much that will still repay perusal, we find few contributions of any importance. The modifications which Simpson's earlier views and practice have undergone owe little to the writings of obstetricians, and hence it is, perhaps, that anæsthesia in midwifery has not yet found its proper place. There are still matters which invite inquiry and discussion. The whole question has again been raised by the introduction of new methods of narcosis in labour. On these grounds it has seemed to the writer that a brief review of the subject might be not without value.

In labour an anæsthetic is employed for two distinct purposes. It may be used in the course of a normal labour for the purpose merely of lessening or abolishing pain, or it may be used to permit of operative procedures. The distinction between these two indications is important, as the method of administration and the dangers differ according as it is used for one or the other purpose. In cases where operative treatment has to be undertaken anæsthesia to the full surgical extent is usually required, and the anæsthetic must be administered in accordance with the rules and considerations which govern its use in surgical cases. Where the conditions demand full narcosis the patient must accept the risks, just as in a necessary surgical operation. Fortunately,

however, the dangers incident to the administration of chloroform, even to the surgical degree, are greatly diminished during labour. As is well known, the pregnant and parturient woman has a special immunity from the dangers of chloroform anæsthesia, but it is important to note that this immunity is not retained, at any rate to the same extent, in the third stage of labour, and hence greater caution is required in its administration for the removal of an adherent placenta.

The cases in which full narcosis is required, however, form a small proportion of those in which an anæsthetic is employed in labour. In the great majority all that is required is alleviation of the severity of the pain; complete narcosis is not induced, and consciousness need not be, and usually is not, abolished. The influence of this partial anæsthesia on the severity of the pains admits of no doubt, but whether it is entirely free from injurious effects, or even from actual danger, there is still some difference of opinion; and it is this doubt as to the entire freedom from injurious influences that has led to the question from time to time being raised as to whether an anæsthetic is required, or is justifiable, in normal labour. The view generally accepted and acted on in this country is that the employment or not of an anæsthetic should be left entirely to the option of the patient, and that, in the absence of contra indications, there is no reason for withholding it.

There have always been some, however, who have been opposed to the use of an anæsthetic in normal labour, and recently Veit[1] has written strongly in support of this view. He maintains that labour is a normal function and should be conducted without an anæsthetic. That an anæsthetic may sometimes be necessary he admits, but only exceptionally in the case of neurasthenic women, and more particularly in such women when the labour is conducted by a neurasthenic physician. Krönig's view is more in accordance with the attitude adopted in this country. In the admirable paper which he read before the Obstetrical Section at the annual meeting of the British Medical Association he emphasised the fact that modern women, in consequence of their increased mental occupations, suffer far more intensely from nervous exhaustion, which diminishes their power of resistance to the pains of labour. He refuses to accept the statement that they are physiological pains and should not be allayed. "Labour pains which are felt so intensely cannot be described as physiological and advantageous."[2]) The majority of practitioners will agree that the demand for the diminution of pain during labour is in part thoroughly justified. At the same time it may be, and probably is, the case that an anæsthetic is used, if not too frequently, at least too freely, in normal labour, and on that ground Veit's protest may be of service.

It is now scarcely in dispute that an anæsthetic is justifiable and, it may be, even advisable in the course of normal labour, and the whole argument for or against its employment turns on the question whether

the anæsthetic involves risks, direct or indirect, or is practically free from danger. For various reasons, chloroform is the anæsthetic agent almost universally used. It is the most convenient, the most uniform in its effects, the most reliable, is devoid of risk when given only to the obstetric extent, and even in full narcosis is practically free from direct danger to life. But objections of a more or less serious nature have from time to time been brought against its employment in normal labour. It is said that it interferes with the activity of the uterus and thus delays labour. The experimental investigations of Dönhoff[3] with chloroform, and of Hensen[4] with ether, would seem to show that this is the case, that chloroform or ether inhalation lengthens the interval between the uterine contractions and diminishes their strength. That they have this effect where the narcosis is deep and prolonged is no doubt true and is in conformity with experience, but in regard to obstetric anæsthesia the experiments are too few to establish conclusions contrary to the clinical evidence which supports rather the view of Spiegelberg, of Dührssen,[5] and of Whitridge Williams that chloroform does not materially influence, in the majority of cases at any rate, either the strength of the contractions or the interval between them, if the anæsthetic is administered at the proper time and in no more than the amount necessary to relieve pain. At the commencement of the administration this effect may be observed, but it is often due less to the drug than to mental influences, which are well known to affect, or even entirely suspend, the contractions of the uterus. It is a common observation that though the interval may at first be considerably lengthened, the pains soon resume their original frequency, even though the anæsthetic is continued. The administration of chloroform may, and usually does, cause some delay, but the delay is immaterial, and it will seldom be found necessary to suspend the administration of the anæsthetic on that account. Still, there are cases in which chloroform, even in small amount, so interferes with the activity of the uterus that there is no help but to discontinue it. On the other hand, it will not infrequently be noted that the anæsthetic has precisely the opposite effect—that it accelerates labour. This result is best seen and may generally be anticipated in those cases in which the pains are too frequent but short, ineffective and attended with an excessive degree of suffering.

A more serious objection to the employment of chloroform in normal labour is that it predisposes to relaxation of the uterus before and after the delivery of the placenta, and thus favours the occurrence of post-partum hæmorrhage. This is undoubtedly the case when the anæsthesia has been deep and long continued, but the influence of chloroform in causing post-partum hæmorrhage even under these circumstances has, we think, been greatly exaggerated. In the most serious cases of hæmorrhage occurring in healthy women, which the

writer has seen, no anæsthetic was used. When hæmorrhage does follow the administration of chloroform it is apt to be attributed to the anæsthetic, when it was the method of delivery or the management of the third stage that was at fault. The fact cannot be overlooked, however, that there are obstetricians who are convinced, and so unprejudiced an observer as Munro Kerr[6] is of this opinion, that chloroform does favour post-partum hæmorrhage, "and very decidedly so if the administration has been continued for any length of time. In my opinion, chloroform distinctly inhibits the retraction of the uterus after the birth of the child." So far as surgical anæsthesia, when prolonged, is concerned, this is admitted, but when complete narcosis is demanded the patient must accept the extra risk. The danger from this cause may be lessened by slow deliberate extraction and by leaving to nature the final expulsion of the child's head, the administration of the anæsthetic being at the same thing discontinued.

Although the dangers of chloroform in labour, even to the full extent, are thus small, the practitioner is not exonerated from taking every precaution in its employment. The time and the method of administration are important.

It is an established rule that chloroform should not be given in the first stage save for some special indication; nor should it be begun too early in the second stage. It should be withheld as long as possible, though to withhold it often requires resolution. The best time to begin is when the head is engaging the pelvic outlet, or just as it begins to distend the pelvic floor. There is no great objection to beginning the anæsthetic earlier than this, if given lightly, but when begun early it has a greater tendency to interfere with the activity of the uterine contractions, and further, there is always the danger either that it may have to be continued too long or that it may lead to unnecessary instrumental delivery. It is in the perineal stage that chloroform is specially indicated, and there are few labours in which it may not be given with benefit at this time. Apart from relieving the extreme severity of the pain at this period, it promotes relaxation of the perineum, permits of the more ready control of the exit of the head, and is thus a most important factor in the prevention of perineal rupture.

The method of administration is equally important. The anæsthetic should be begun with a pain and given only during the pains. When the pain passes off the towel or mask should be removed. On the first indication of a returning contraction 15 to 20, or more, drops should again be given, and so on, the towel being removed in the interval. The quantity required to make the suffering tolerable, or even to abolish it, is variable, but is often surprisingly small.

Even in cases where the conditions require full narcosis it is well to begin by inducing obstetric anæsthesia, to give chloroform at first

only with the pains. That is an important factor in the safety of chloroform administration in labour. The longer anæsthesia by the obstetric method and to the obstetric extent is maintained, the more readily and the more safely may full narcosis be induced. In the only two cases in which the writer has seen serious symptoms arise the result was due to too rapid administration. Moreover, after the continuance of partial anæsthesia for some time, delivery may often be instrumentally completed without the slightest movement or apparent pain on the part of the patient, even though surgical anæsthesia has not been induced.

As an anæsthetic in labour, chloroform possesses many advantages over ether, yet it will be well to employ the latter in cases where the patient is debilitated or where operative treatment is likely to be prolonged. In a few cases of this kind the writer has regretted that ether was not substituted for chloroform. In cases of advanced heart disease the A.C.E. mixture, or a mixture of three parts of ether to one of chloroform, should be preferred.

In labour with heart disease an anæsthetic is not contra-indicated. On the contrary, it has been the rule, ever since the late Angus Macdonald advocated it in his classical monograph, to give chloroform as soon as the os uteri is fully dilated, so that delivery may at once be completed with the forceps and the injurious effects of the downbearing pains be prevented. Even in heart disease the parturient woman retains her immunity to the dangers of chloroform. In a considerable number of cases of labour with heart disease attended by the writer there were three in which the labour was attended or followed by serious disturbances of compensation, and in two of the three no anæsthetic was employed, because there was no time to give it. In heart disease the anæsthetic, preferably the A.C.E. mixture, should be administered, and delivery completed, in the dorsal position.

Limitations of space prevent consideration of the more recent methods of anæsthesia in labour.

References.

[1] Veit, "Ueber den Werth der Narcose bei der Geburt," *Therapeutische Monat*, November 1908.

[2] Krönig, *Brit. Med. Journ.*, September 1908.

[3] Dönhoff, *Archiv. f. Gynäk.*, Bd. 42.

[4] Hensen, *Archiv. f. Gynäk.*, Bd. 56.

[5] Dührssen, *Berl. klin. Wochenschr.*, 1892.

[6] Munro Kerr, *Operative Midwifery*.

PHYSIOLOGY.

By T. H. MILROY, M.D.,
Professor of Physiology, Queen's College, Belfast.

Massage and Muscular Efficiency.

Palmen and Rancken (*Skandinav. Arch. f. Physiologie*, vol. xxi. p. 383, 1909) have recently carried out an elaborate and careful series of experiments on the effects of various types of massage upon the fatigue curves of muscle. The experiments were carried out as follows:—The work records were taken with Johansson's ergograph, a weight of 30 kilogrammes being lifted by the arms alone without the muscles of the back being brought into play. The rate of lifting was 30 times per minute, and the experiment was continued until the person could no longer raise the weight. The person then rested for 3 minutes, and, following the interval, a second series of muscular contractions was taken. Pause and working period alternated until 20 series of "fatigue" muscular records were obtained. Every alternate day the arms were massaged for 3 minutes before the first "fatigue" series was taken. The massage took the form of muscular kneading ("petrissage"). The observers therefore obtained "normal" results and "massage" results, these being plotted out in curve forms. All the experiments were carried out in the early morning, so that the muscles were fully rested. In all cases the amount of work performed was distinctly greater on the "massage" than on the "normal" days. The amount of work during one series of the former amounted on the average to 539 kgm.-mètres, while in the case of the latter it was only 426 kgm.-mètres. The curve of the former was throughout at a higher level than that of the latter. The total work accomplished during 20 series was, in the case of the normal experiments, 6942 kgm.-mètres, in the "massage" experiments, 7656 kgm.-mètres.

The beneficial effect of the massage was evident even $1\frac{1}{2}$ hours after the experiments had been interrupted. It has been, of course, well recognised by numerous observers that the muscles can perform a larger amount of work after careful massage has been carried out, but Palmén and Rancken do not believe that the correct interpretation of the results has been given.

Zabludowsky (*Zentralblatt f. d. med. Wissenschaften*, p. 241, 1883) believed that the beneficial effects were produced by the removal of effete products and the better supply of fresh nutritive material as a result of the improved circulatory conditions. This explanation has also been given by most observers who have investigated the subject, and in support of their views they bring forward the results of such massage movements as apparently improve merely the circulatory conditions. Thus, that form of massage—"effleurage"—which consists

in gentle pressure exerted along the course of the muscles in a centripetal direction, produces markedly beneficial results. In this method the larger part of the palmar surface of the hand is used in exerting the pressure, and seemingly the main effect is to assist the venous flow and consequently the arterial blood-supply.

Palmén and Rancken believe that, considering the rapid regulation of the blood-supply to muscles brought into action, it is extremely unlikely that the beneficial effect of gentle massage on the circulation can be anything but extremely slight. They also draw attention to the long duration of the beneficial effects of massage, which could scarcely be brought about by the very temporary improvement in the local circulatory conditions. They give the results of a series of experiments which are highly interesting. When that form of massage ("effleurage") is employed which is directed towards an improvement of the local circulatory conditions without any muscular kneading, the beneficial effect upon the muscular efficiency is of short duration, and only evident in the series of contractions taken immediately after the massage. The authors compare the work done, under normal conditions, after "petrissage" and after "effleurage," and the results obtained in one such series may be given. The total amount of work under normal conditions in 20 series of work records was 2380 kgm.-mètres, after "effleurage" 2428 kgm.-mètres, and after "petrissage" 2632 kgm.-mètres. The increase (48 kgm.-mètres), as a result of "effleurage," was due entirely to improvement during the first series, while the increase of 252 kgm.-mètres after "petrissage" was due to an improvement throughout the 20 series, 100 kgm.-mètres of the increase being distributed over the last 18 series. The beneficial effect of "effleurage" is thus only evident for about 2 minutes after the massage, while in the case of "petrissage" it is still to be seen for 1½ hours after this form of massage has been carried out.

The authors, therefore, believe that much of the beneficial effect of massage is due to an increase in the vital activity of the contracting tissues, brought about by a direct mechanical stimulation.

Activity of Pepsin Solutions.

Shaklee and Meltzer (*Zentralblatt f. Physiologie*, vol. xxiii. p. 3) have recently tested the effect of mechanical disturbances, such as shaking, on the activity of solutions containing pepsin. They found that when such solutions were shaken for 20 to 30 minutes there was a marked loss in activity, and if the process were continued for 3 or 4 hours the solutions became inactive. They also found that when pepsin solutions were introduced in sealed tubes into the stomach they gradually lost their digestive power. They thought at first that this might be due to the mechanical disturbance brought about by

respiratory and other movements, but in a later series of experiments referred to in the same journal Shaklee regards the effect as being more probably produced by the prolonged subjection of the solution to the body temperature. Thus, after being kept at 37° C. for 12 hours, the solution lost about 20 per cent. of its activity, and after 12 days about 86 per cent.

Effects of Ligature of Pancreatic Ducts.

Visentini (*Engelmann's Arch. Supplement*, Bd. 1908, p. 23) has investigated this subject, around which so much controversy has arisen. He comes to the following conclusions:—

1. In the great majority of the dogs in which the principal and accessory ducts were tied and cut, the following micro- and macroscopic changes were evident:—There was very marked sclerosis and atrophy of the acinar tissue, in some cases resulting in complete disappearance of the gland acini, while the Langerhans' islets still preserved in the main their normal characters. In all these cases there was very distinct steatorrhœa, but no trace of sugar in the urine, even when all glandular tissue had atrophied, and the only elements which had retained their characters were the islets of Langerhans.

2. In some cases the animals remained almost in their normal condition, showing practically no loss of fat by the fæces and no distinct decrease in weight. On microscopic examination of the pancreas the glandular tissue was preserved, so that evidently in these cases a path had remained open for the discharge of the pancreatic juice into the duodenum.

Visentini carried out similar experiments on pigeons, and came to almost the same conclusions, although the anatomical relations of the pancreas in the pigeon are such as to make it difficult to obtain a complete atrophy of the glandular tissue.

He concludes, therefore, that the islets of Langerhans are the elements in the pancreas which in some way or other regulate the carbohydrate metabolism, and that they may persist when all the glandular tissue has disappeared. It is unfortunate that the author omits all reference to the work done by English investigators on this subject.

The Protein Minimum.

Up to the present no one has succeeded in maintaining an animal in nitrogenous equilibrium by giving simply that amount of protein which is disintegrated during a starvation period. The organism selects those products of protein digestion which are required for the building up of its own proteins and rejects those which are not necessary. One would therefore expect that nitrogenous equilibrium would be attained on a lower protein minimum if the animal were fed

on proteins similar in composition to those of its own tissues than if foreign proteins were given.

Michaud (*Zeit. f. Physiol. Chem.*, vol. lix. p. 490) finds that this is the case. For example, dogs may be kept in nitrogenous equilibrium on the hunger minimum if the proteins are given in the form of dog's flesh or dog's blood serum. The more foreign the proteins are, the higher the necessary nitrogenous intake to maintain equilibrium, as, for example, when horse flesh or casein are given to a dog. The cannibal, therefore, might bring forward Michaud's work as evidence in favour of his choice of a dietary.

THERAPEUTICS.

By FRANCIS D. BOYD, C.M.G., M.D., F.R.C.P.,
Assistant-Physician, The Royal Infirmary.

Some Recent Papers on Bacterio-Therapy.

In a dissertation, Jena 1908, Bayer discusses the serum treatment of pneumonia with Römer's pneumococcic serum as carried out in the Jena Clinic. Twenty-one cases were treated with serum. Fourteen cases received 1 injection, 6 cases received 2 injections, 1 case received 4 injections ; 10 c.cm. of the serum was always injected. No harmful result was noted from the injections, and there was no local reaction, and no exanthema followed the injections. The injections were always followed by improvement, a euphorbia not only in those cases where there had been a lowering of temperature and a diminution of the physical signs, but also in cases where there followed only a temporary lowering of the temperature and where the physical signs did not lead one to expect improvements.

In 6 of the cases crises followed the injections, and in 4 pseudo-crises. After the injections there was a fall in temperature for 2 to 10 hours to an extent varying from 0·5° to 4°. In 16 cases the fall was between 2° to 4°. In only 4 cases was there no apparent influence upon the temperature. In no case was there a rise of temperature following the injections. In most of the cases, except where the crises followed the injection, the temperature rose again after the fall, but it was noted that repeated injections always gave the same lowering of the temperature. Collapse was never observed following the injections. The influence on the pulmonary signs was very variable. In the majority the signs remained limited to that portion of the lung affected before the injections, but in 3 cases the signs spread uninfluenced by the injections.

The circulation is reported to have been favourably influenced.

Cyanosis was lessened, the pulse became less frequent, more regular, and of a better character.

As far as the mortality statistics go, the cases are too few to draw conclusions from, but it is pointed out that the cases were not selected, that the mortality was 4·7 per cent., while cases treated symptomatically at the same time in the same clinic showed a mortality of 16 per cent. The author urges that the great point in favour of the serum treatment is its influence on the temperature. In 85 per cent. of the cases there was a fall, in 64 per cent. the fall was 2·9°. The serum is therefore, if nothing else, a valuable antipyretic, which, unlike other antipyretics, does not disturb the heart. Under the serum the pulse becomes fuller, stronger and more regular, and the breathing quieter. The patient feels well, and under the improved conditions obtains a period of rest which enables him the better to fight the disease. This alone would speak for the therapeutic work of the treatment. The author admits the practical difficulties of using the serum in all cases at present, but thinks it might well be employed in severe cases and not too late.

Krische (*Medizin. Klinik*, 1908), working with Römer's serum, and having recourse to no other form of treatment, reports the result in 10 cases of pneumonia. The results were mostly good, in some cases surprisingly favourable. Local reaction seldom occurred and was never severe. He does not look on heart weakness as any contra-indication, but, on the contrary, thought that the serum had a favourable effect on the circulation.

Schnätgen (*Berliner. klin. Wochenschr.*, 1909, No. 3) discusses the "auto-serotherapy" of pleural effusion—a method which was introduced by Gilbert and Fede. The method has at least the advantage of simplicity. A syringe of pleural fluid is withdrawn from the pleural sac of the patient and is injected into the subcutaneous tissues. The writer claims benefit from the method. In simple cases a single injection of fluid was sufficient, in more severe cases a number of injections were necessary. No bad effects were observed as the result of the injections. In hydrothorax, ascites, and in commencing empyema the method gave no results, but in pleurisy with effusion a rapid absorption of the fluid followed the injections.

In the selected papers published by the staff of the Massachusetts General Hospital there are several on bacterio-therapeutics. Richardson discusses the treatment of typhoid fever with specific sera, filtrates and residues. The effort in the observations was by inoculating the horse with typhoid material to produce a serum which should be of assistance in human typhoid infection; and in the second place, by inoculating the typhoid patient himself with small doses of typhoid material to hasten his own immunity and cure. The serum was used in 35 cases and was given by subcutaneous injection, by the mouth and

by the rectum, and subcutaneously along with normal serum to secure the assistance of any complements which might be present in the normal serum. In the serum cases only in one did any disturbance (an urticaria) follow the injections; in the filtrate cases, in a large number there was a definite reaction. The author finds from his study of 130 cases that specific therapy, confined to the original disease, increases the tendency of the disease to relapse, but that with therapeutic inoculation, continued with convalescence, the relapse in typhoid fever may be largely eliminated. If this claim be confirmed by observations on a larger scale, then it would be expected that specific inoculations should abort mild typhoid infections. Typhoid serum, the author finds, has no more effect than filtrates and residues, and is infinitely more expensive. The reaction to the filtrates is followed by a fall in temperature, pulse and respiration, and a general improvement in the clinical picture.

Deléarde et Paquet (*L'Echo Médical*, May 1909) discuss the serotherapy of chlorosis. They point out that when an animal is bled the blood soon recovers its normal volume, but it is some time before it recovers its richness in hæmoglobin and corpuscles. During this time the serum of the animal, if injected into a second animal, has the power of provoking a considerable and rapid increase in the number of blood corpuscles. This phenomena is particularly marked in the rabbit. The obvious difficulties of obtaining a sufficient supply of serum from such a source led the authors to work with the antidiphtheritic and antitetanic serum obtained from the horse—an animal which has been habituated to repeated bleedings. The authors found that such a serum injected into anæmic children produced a marked rise in the blood-count—a gain of a million red corpuscles per c.mm. in 10 days in one case, in a second case $2\frac{1}{2}$ millions in a month. Deflandre (*Progrès Médicale*, 13th February 1909) made observations on women anæmic from menorrhagia. In such cases it was found that after a menstrual period it took 15 days for the patient to regain the normal blood state, but with the injection of dry serum (2 to 4 grms. per diem) the number of red corpuscles increased very rapidly and attained the normal in about a week after the beginning of the menstrual period. The obvious drawback to such a method of treatment is the discomfort of repeated injections. Dufour gave antidiphtheritic serum by the mouth in a number of cases and observed the effects. In all it appeared to be beneficial, and to have the same influence as when injected subcutaneously. Deléarde and Paquet quote cases where in their experience under the oral administration of serum the blood-count rose rapidly from 3 to 5 million per c.mm. They conclude that serum therapeutics is destined to play a very important *rôle* in the treatment of pathological conditions where blood regeneration is desired. They always

found its administration followed by marked amelioration of the anæmia. From the rapidity of its action and from the fact that it never produces digestive disturbance, they claim that it is superior to iron and arsenic in the treatment of anæmia. They advise the administration of 10 cc.m. of serum daily by the mouth for 4 consecutive days, then a rest for 20 days, followed, if necessary, by a repetition of the serum.

At the present season a paper by Billiard and Maltet (*Gazette des Hôpiteau*, No. 52, May 1909) on the serum treatment of hay fever is of interest. They admit the theory that pollen is responsible for the coryza, but urge that the pollen of grasses cannot alone be held responsible. Certainly it is frequently responsible, but only because grasses are so very prevalent and other pollen is less abundant in the atmosphere. Other pollen, they claim, is capable of being a causal factor. They have accordingly prepared a polyvalent serum. The abdominal cavity of ducks and geese was injected with the pollen of a large number of different plants and a serum obtained. The authors quote cases where attacks were prevented in susceptible individuals, until they came in contact with a plant, the antitoxine of which was not contained in the serum. The authors point out that it is impossible to get a serum which can neutralise the pollen of all plants, owing to the numbers and variety of plants which are capable of causing the disease in susceptible individuals, hence a cure cannot be guaranteed. They draw an analogy between hay fever and acute asthma, which latter they believe to be a reaction of the organism to the effects on the upper-air passages of toxalbumins of vegetable origin. They do not urge that all asthmatics are alike, but they hold that in all the determining cause of the attack is the irritating effects of vegetable dust or the pollen of plants. The authors treated cases with a serum got after the injection of vegetable dust and the pollen of plants into animals. Ten cases were treated, 5 successfully, 5 without any effect. They ascribe the failure to an extreme sensitiveness on the part of the individual, in whom the asthmatic attacks developed suddenly without any premonitory signs, such as sneezing. They claim that the serum will inhibit periodic asthma and alleviate certain cases of the aperiodic form.

In the *Bulletin de l'Académie de Médicine*, February 1909, there is exhaustive study by Castel and Lafont on the treatment of bubonic plague by Yersin's serum. The epidemic occurred in the Ile Maurice in 1899 and lasted till 1908, during which time the researches were pursued. Many minute observations were undertaken as regards the efficacy of the serum. They conclude that it is impossible to over-estimate the value of the antiplague serum, provided it is injected at the opportune moment and in sufficient dose. The serum, combined with absolute rest, is a most efficacious remedy, and gives a percentage

of cures of from 77 to 87 per cent. of cases. To obtain success large doses must be injected at the commencement of the disease. Serum injected on the first day has marvellous effects; on the second it is almost as sure to cure, but less rapidly; on the third its efficacy is diminished but it is still valuable; on the fourth and onwards it has but little effect. Intravenous injection is preferable to any other method of administration, as the action is more rapid and the administration is less painful than by the subcutaneous method. The dose injected should vary between 40 c.cm. for a baby and 160 to 200 c.cm. for an adult. The second and following injections should be carried out before the temperature, which usually falls to the normal after the first injection, begins to rise again. This rise generally takes place on the following day but sometimes sooner. The second dose should exceed the initial dose by at least a fifth, and may be even double the original dose. The injections should be repeated until the temperature becomes normal and remains steady. Success depends on the strict application of these rules.

NEW BOOKS AND NEW EDITIONS.

Transactions of the American Surgical Association. Vol. XXVI. 1908. Edited by RICHARD H. HARTE. Philadelphia: Wm. J. Dornan. 1908.

THE report of the Committee on Necrology which precedes the transactions proper this year concerns itself with Markoe, Brinton and Senn, Fellows of the Association, and Thomas Annandale and Friedrich von Esmarch, Honorary Fellows. There are no less than thirty-nine papers in the *Transactions*, and the list of their authors includes the best known names in America. Some of the papers are already familiar through having appeared in the *Annals of Surgery*. They deal for the most part with the subjects which have recently attracted the attention of the profession, and it need hardly be said are well printed and furnished with good illustrations.

Surgery: Its Principles and Practice. By Various Authors. Edited by WILLIAM WILLIAMS KEEN. Vols. III., IV. and V. With 562 Text Illustrations and 10 Coloured Plates. Philadelphia and London: W. B. Saunders Co. 1908.

Keen's Surgery is rapidly gaining the first place as a work of reference in the department of medicine of which it treats. It not only surpasses all rivals written in English, but it is also greatly superior to the systems of surgery published by French or German authors. Its excellence is due to each subject being written by an expert, at sufficient but not too great length, and to the number and excellence of the illustrations. In Vol. III. the Surgery of the Head is by Harvey Cushing, and extends to nearly 300 pages—quite a book in itself; the Neck, by Wyllys Andrews; the Thyroid Gland, by Albert Kocher; the Nose and its Accessory Sinuses, by Harmon Smith; the Larynx, Trachea and Thorax, by George E. Brewer; the Breast, by Finney; the Mouth and Jaws, by Edmund Owen; the Tongue, by Da Costa; the Technique of Abdominal Surgery and the Surgery of the Abdominal Wall and Peritoneum, by Munro; the Œsophagus, by Gottstein; the Stomach, by Mayo Robson; the Liver, Gall-bladder and Bile-ducts, by the brothers Mayo; and the Pancreas and Spleen, by Moynihan.

In Vol. IV. Da Costa is associated with Keen as joint-editor. Hernia is by Coley; the Rectum and Anus, by Abbe; the Kidney, by Ransohoff; the Bladder, by Lewis; the Prostate, by Young; the Intestines, by van Hook and Kanavel; and the Vermiform Appendix, by J. B. Murphy.

There are special sections on the surgery of the Ear, the Eye, Military and Naval Surgery, the Surgery of the Tropics, and a chapter by Rodman on the Influence of Race, Sex and Age in Surgical Affections.

Gynæcology and Abdominal Surgery. Vol. II. Edited by HOWARD A. KELLY and CHARLES P. NOBLE. Sup. roy. 8vo. 871 Illustrations. Pp. 900. Philadelphia and London: W. B. Saunders Co. 1908. 35s.

We gladly welcome the second volume of the above work. It maintains the high standard of its predecessor, both as regards the text and the illustrations.

The present volume includes chapters on the Operative Surgery of the Gall-Bladder, Liver and Bile-Ducts; the Intestine; the Kidney; Cæsarian Section and Extra-Uterine Pregnancy.

There is a valuable article on the Diseases of the Breast by Bloodgood, in which attention is also paid to the physiology and anatomy of that organ. The article is profusely illustrated with excellent coloured plates and photographs, obtained from material in the clinic of Professor Halsted. Exception must be taken to the illustrations of Halsted's method of performing complete excision of the breast. The artist has figured not less than 70 pairs of artery forceps in and about the wound, entirely obscuring the field of operation and the anatomical detail.

Moynihan deals with the chapter on gastric surgery, and is to be congratulated on condensing into about 50 pages, many of which bear large illustrations, such an able survey of gastro-enterostomy, gastrectomy, gastrostomy and gastropexy.

A long article on intestinal surgery is contributed by J. B. Murphy, whose opinion, founded on a wide experience, always commands attention. He discusses at considerable length rectal cancer and prolapsus ani; for the treatment of the latter condition some ten different methods are described.

Guy Hunner writes an interesting paper on the rare forms of hernia, and describes in detail both Cushing's and Noble's methods of performing the radical cure of femoral hernia. We condemn the somewhat arbitrary nomenclature of the very variable peritoneal reflections situated around the cæcum, which are figured on page 694.

The last section of the book deals with the kidney, and the authors, Noble and Anspach, have produced a comprehensive survey of the surgery of that organ. They draw particular attention to the advantages of Brodel's incision in nephrotomy, and several illustrations supplement the text.

It is interesting to note their remarks on decortication of the kidney,

which was introduced by Edebohls in 1901 for chronic Bright's disease: "This operation is still under trial; it cannot be stated at present that decortication of the kidney will find a permanent place in the therapy of chronic Bright's disease." In like manner as a method of treatment for eclampsia, it seems to lack physiological foundation.

In the article on Cæsarian Section, the author makes the somewhat sweeping assertion that "craniotomy cannot for a moment be considered if the child is living." Surely the parents have a right to consider it in moderate degrees of contraction! In these cases craniotomy is associated with practically no risk.

One is surprised that no mention is made of Lawson Tait's modification of Porro's operation, as it is the only method of practicability of any practitioner in a tight corner and under adverse conditions.

The Operative Treatment of Sepsis in the Child-Bearing Period, by Barton Cooke and Hirst, is an excellent *résumé* of this difficult and much-debated subject.

Extra-uterine Gestation is discussed at great length, and from all aspects, by Whitridge Williams, who strongly advocates the abdominal as against the vaginal route in operating.

As a whole, the book is a veritable mine of up-to-date information, and must remain a lasting monument to its indefatigable editors.

LIST OF BOOKS RECEIVED FOR REVIEW.

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